

We believe that measuring student progress against standards is an effective way to measure school progress and teacher achievement. Our curriculum will be aligned to:

- The Common Core State Standards for ELA and Math
- Illinois Learning Standards for Science
- Illinois Learning Standards for Social Science for History and Geography

Not all of the grade levels are currently aligned with the above standards. As stated in the start-up plan, we will complete the curriculum alignment process by June of 2018 to ensure that all professional development and teacher materials reflect this alignment and properly train the staff on how to measure it.

#### *The Core Knowledge Sequence (CK)*

- The literature base of our K-8 program comes directly from the readings and lessons of Core Knowledge. Language Arts instruction will also come with the Riggs explicit phonics program which functions also in the area of grammar, syntax, composition, spelling, and vocabulary. The aforementioned skills are critical components of the Illinois Learning Standards, and we believe this complement to Core Knowledge will offer a superior, literacy-based reading and writing program.
- Core Knowledge History and Geography (CKHG) curriculum is aligned with the Common Core, and a thorough alignment comparison has been completed for all units currently available from the Core Knowledge Foundation (CKHG Grades 3-5); Curriculum for Grade 3 that includes alignment in the Teacher's guide for every unit is included in the attachment. Grades 4 and 5 are available for free download at [www.coreknowledge.org](http://www.coreknowledge.org)
- We have mapped this alignment for Illinois Learning Standards for Social Science (ILSSS) for a sample unit in Grade 3
- We are committed to ensuring that our students meet and exceed state standards and will continue to align the rest of the curriculum with ILSSS (as indicated in the start-up plan in section 3.1.2).
- Illinois' current science standards became effective in February 2014 and are based on the Next Generation Science Standards (NGSS). The CK Science curriculum (CKSci) is aligned with the NGSS standards. This alignment is included for Grades K and 1. CK Foundation is working to complete alignments for Grades 2-8. We are committed to ensuring that our students meet and exceed state standards. If the entirety of the CKSci sequence is not aligned by March of 2018, the Principal in conjunction with the Design Team and select advisors will complete the alignment internally. (as indicated in the start-up plan in section 3.1.2).

#### *Singapore Math*

- Singapore Math is aligned with the Common Core State Standards.

The following documents support the alignment discussed above:

- CK ELA alignment to the CCSS
- CKHG alignment to CCSS (for Grade 3)
- CKHG alignment to ILSSS (for sample Grade 3 unit)
- CKSci alignment to NGSS (for Grades K-1)
- Singapore Math alignment to the CCSS

| Core Knowledge Sequence<br>Kindergarten   | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| <b>I. Listening and Speaking</b>  |  |  |
| <b>A. Classroom Discussion</b>  |  |  |
| Participate in age appropriate activities involving listening and speaking.   | <b>SLK.1</b> Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.  |  |
| Speak clearly with volume appropriate to the setting.   | <b>SLK.6</b> Speak audibly and express thoughts, feelings, and ideas clearly.  |  |
| Use agreed-upon rules for group discussions, i.e., look at and listen to the speaker, raise hand to speak, take turns, say “excuse me” or “please,” etc.  | <b>SLK.1</b> Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.<br><b>a.</b> Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).   |  |
| Ask questions to clarify conversations, directions, exercises, and/or classroom routines.   | <b>SLK.3</b> Ask and answer questions in order to seek help, get information, or clarify something that is not understood.   |  |
| Carry on and participate in a conversation over four to five turns, staying on topic, initiating comments or responding to a partner’s comments, with either an adult or another child of the same age. | <b>WK.5</b> With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.<br><b>SLK.1</b> Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.<br><b>b.</b> Continue a conversation through multiple exchanges |  |
| Identify and express physical sensations, mental states, and emotions of self and others.   | <b>SLK.6</b> Speak audibly and express thoughts, feelings, and ideas clearly.  |  |
| Understand and use language to express spatial and temporal relationships (up, down, first, last, before, after, etc.).   | <b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>e.</b> Use the most frequently occurring prepositions (e.g., to, from, in, out, on, off, for, of, by, with).  |  |
| Understand and use narrative language to describe people, places, things, locations, events, actions.   | <b>SLK.4</b> Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.  |  |
| Understand and use common sayings and phrases such as “Better safe than sorry” and “Look before you leap” (see page 11).  | <b>LK.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts.  |  |

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| <b>B. Presentation of Ideas and Information</b>  |  |  |
| Follow multi-step, oral directions.  | <p><b>SLK.1</b> Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.</p> <p><b>a.</b> Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).</p>  |  |
| Give simple directions.  | <p><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p><b>SLK.6</b> Speak audibly and express thoughts, feelings, and ideas clearly.</p>  |  |
| Provide simple explanations.   | <p><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p>   |  |
| Recite a nursery rhyme, poem or song independently   |  |  |
| <b>C. Comprehension and Discussion of Read-Alouds—All Texts</b>  |  |  |
| Listen to and understand a variety of texts read aloud, including fictional stories, fairy tales, fables, historical narratives, drama, informational text, and poems. | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.</p> <p><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p>  |  |
| <b>Grasping Specific Details and Key Ideas</b>   |  |  |
| Describe illustrations.  | <p><b>RLK.7</b> With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).</p> <p><b>RIK.7</b> With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).</p> |  |
| Sequence four to six pictures illustrating events in a read-aloud.   | <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RIK.2</b> With prompting and support, identify the main topic and retell key details of a text.</p>  |  |

| <b>Core Knowledge Sequence Kindergarten</b>   | <b>Common Core State Standards covered at CK Grade Level</b>   | <b>Common Core State Standards covered above or below CK Grade Level</b> |
|---|--|--|
| Answer questions requiring literal recall and understanding of the details and/or facts of a read-aloud, i.e., who, what, where, when, etc. | <p><b>RLK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>SLK.2</b> Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.</p>   |  |
| Retell key details.   | <p><b>RLK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RIK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RIK.2</b> With prompting and support, identify the main topic and retell key details of a text.</p> <p><b>RIK.8</b> With prompting and support, identify the reasons an author gives to support points in a text.</p> <p><b>WK.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p>            |  |
| Ask questions to clarify information in a read-aloud.   | <p><b>RIK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>SLK.2</b> Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.</p>   |  |
| Use narrative language to describe people, places, things, locations, events, actions, a scene or facts in a read-aloud.                    | <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.</p> <p><b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.</p> <p><b>SLK.4</b> Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.</p> <p><b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> |  |

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|  | <p><b>b.</b> Use frequently occurring nouns and verbs.</p>   |  |
| <b>Observing Craft and Structure</b>   |  |  |
| <p>Understand and use words and phrases heard in read-alouds.</p>  | <p><b>RLK.4</b> Ask and answer questions about unknown words in a text.</p> <p><b>RIK.4</b> With prompting and support, ask and answer questions about unknown words in a text.</p> <p><b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>b.</b> Use frequently occurring nouns and verbs.</p> <p><b>LK.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.</p> <p><b>a.</b> Identify new meanings for familiar words and apply them accurately (e.g., knowing duck is a bird and learning the verb to duck).</p> <p><b>b.</b> Use the most frequently occurring inflections and affixes (e.g., -ed, -s, re-, un-, pre-, -ful, -less) as a clue to the meaning of an unknown word.</p> <p><b>LK.5</b> With guidance and support from adults, explore word relationships and nuances in word meanings.</p> <p><b>b.</b> Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).</p> <p><b>d.</b> Distinguish shades of meaning among verbs describing the same general action (e.g., walk, march, strut, prance) by acting out the meanings.</p> |  |
| <p>Compare and contrast similarities and differences within a single read-aloud or between two or more read-alouds.</p>      | <p><b>RLK.9</b> With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.</p> <p><b>RIK.9</b> With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).</p>   |  |
| <p>Make personal connections to events or experiences in a read-aloud and/or make connections among several read-alouds.</p> | <p><b>RIK.3</b> With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p>   |  |

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|  | <p><b>LK.5</b> With guidance and support from adults, explore word relationships and nuances in word meanings.</p> <p><b>c.</b> Identify real-life connections between words and their use (e.g., note places at school that are colorful).</p>  |  |
| <b>Integrating Information and Evaluating Evidence</b>   |  |  |
| <p>Prior to listening to a read-aloud, identify what they know and have learned that may be related to the specific story or topic to be read aloud.</p>                         | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.</p> <p><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p>  |  |
| <p>Use pictures accompanying the read-aloud to check and support understanding of the read-aloud.</p>  | <p><b>RLK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.</p> <p><b>RLK.7</b> With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).</p> <p><b>RIK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RIK.2</b> With prompting and support, identify the main topic and retell key details of a text.</p> <p><b>RIK.3</b> With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RIK.7</b> With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).</p> |  |
| <p>Make predictions prior to and during a read-aloud, based on the title, pictures, and/or text heard thus far and then compare the actual outcomes to predictions.</p>          | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.</p> <p><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p>  |  |
| <p>Answer questions that require making interpretations, judgments, or giving opinions about what is heard in a read-aloud, including answering “why” questions that require</p> | <p><b>RIK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>WK.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a</p>   |  |

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|---|---|---|
| recognizing cause/effect relationships.   | reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g. My favorite book is...).   |   |
| Identify who is telling a story or providing information in a text.   |   |   |
| <b>D. Comprehension and Discussion of Read-Alouds- Fiction, Drama, and Poetry</b>   |   |   |
| Retell or dramatize a story, using narrative language to describe characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence.       | <b>RLK.2</b> With prompting and support, retell familiar stories, including key details.<br><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.  |   |
| Change some story events and provide a different story ending.  | <b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.  |   |
| Create and tell an original story, using narrative language to describe characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence. | <b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.  |   |
| **Draw pictures and/or dictate ideas to represent details or information from a read-aloud (L.K.21)   | <b>WK.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g. My favorite book is...).<br><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.<br><b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.<br><b>SLK.5</b> Add drawings or other visual displays to descriptions as desired to provide additional detail. |   |
| Distinguish fantasy from realistic text in a story  | <b>RLK.5</b> Recognize common types of text (e.g., storybooks, poems).  |   |
| **Evaluate and select read-alouds, books, or poems on the basis of personal choice for rereading (L.K.23)   | <b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br><b>RIK.10</b> Actively engage in group reading activities with   |   |

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|---|---|--|
| <p>Demonstrate understanding of literary language (e.g., author, illustrator, characters, setting, plot, dialogue, personification, simile, and metaphor) and use some of these terms in retelling stories or creating their own stories.</p> | <p>purpose and understanding.</p> <p><b>RLK.6</b> With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.</p> <p><b>RIK.6</b> Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.</p>  |  |
| <b>E. Comprehension and discussion of Read-Alouds – Non-fiction and Informational Text</b>  |   |  |
| <p>Retell important facts and information from a nonfiction read-aloud.</p>   | <p><b>RLK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RIK.2</b> With prompting and support, identify the main topic and retell key details of a text.</p> <p><b>RIK.8</b> With prompting and support, identify the reasons an author gives to support points in a text.</p> <p><b>WK.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p>   |  |
| <p>With assistance, categorize and organize facts and information within a given topic.</p>   | <p><b>RIK.3</b> With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>WK.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g. My favorite book is...).</p> <p><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p><b>WK.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>LK.5</b> With guidance and support from adults, explore word relationships and nuances in word meanings.</p> <p style="padding-left: 20px;"><b>a.</b> Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.</p> |  |



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|--|---|--|
| With assistance, create and interpret timelines and lifelines related to read-alouds.  | <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.</p> <p><b>RIK.3</b> With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> |  |
| Distinguish read-alouds that describe events that happened long ago from those that describe contemporary or current events.   | <p><b>RIK.7</b> With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).</p>   |  |
| <b>II. Reading</b>   |   |  |
| <b>A. Print Awareness</b>  |   |  |
| Demonstrate understanding that what is said can be written and that the writing system is a way of writing down sounds.  | <p><b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.</p>  |  |
| Demonstrate understanding of directionality (left to right, return sweep, top to bottom, front to back).   | <p><b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.</p> <p>a. Follow words from left to right, top to bottom, and page by page.</p>  |  |
| Identify the parts of books and function of each part (front cover, back cover, title page, table of contents).  | <p><b>RIK.5</b> Identify the front cover, back cover, and title page of a book.</p> <p><b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.</p>  |  |
| Demonstrate correct book orientation by holding book correctly and turning pages.<br>Recognize that sentences in print are made up of separate words.  | <p><b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.</p>  |  |
| Understand that words are separated by spaces.   | <p><b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.</p> <p>c. Understand that words are separated by spaces in print.</p>  |  |
| Distinguish letters, words, sentences, and stories.<br>Demonstrate understanding of basic print conventions by tracking and following print word for word when listening to text read aloud. | <p><b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.</p>  |  |

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|---|--|--|
| Demonstrate understanding that the sequence of letters in a written word represents the sequence of sounds in the spoken word.  | <b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.<br><b>b.</b> Recognize that spoken words are represented in written language by specific sequences of letters.   |  |
| Recognize and name the 26 letters of the alphabet in both their upper-case and lower-case forms.  | <b>RFK.1</b> Demonstrate understanding of the organization and basic features of print.<br><b>d.</b> Recognize and name all upper- and lowercase letters of the alphabet.  |  |
| Say the letters of the alphabet in order, either in song or recitation.   |  |  |
| <b>B. Phonological and Phonemic Awareness</b>   |  |  |
| Identify environmental sounds, e.g., keys jingling, scissors cutting, clapping.   |  |  |
| Identify whether pairs of environmental sounds are the same or different.   |  |  |
| Count the number of environmental sounds heard, e.g., clapping, rhythm band instruments.  |  |  |
| Orally segment sentences into discrete words. Demonstrate understanding that words are made up of sequences of sounds.<br>Demonstrate understanding that vowel sounds are produced with the mouth open and airflow unobstructed, whereas consonant sounds involve closing parts of the mouth and blocking the air flow.<br>Given a pair of spoken words, select the one that is longer (i.e., contains more phonemes).<br>In riddle games, supply words that begin with a target phoneme. | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).  |  |
| Indicate whether a target phoneme is or is not present in the initial/medial/final position of a spoken word, e.g., hear /m/ at the beginning of mat and /g/ at the end of bag.<br>Listen to one-syllable words and tell the beginning or ending sounds, e.g., given dog, identify initial /d/ or final /g/.  | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>d.</b> Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words. (This does not include CVCs ending with /l/, /r/, or /x/.) |  |

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|--|---|--|
| Recognize the same phoneme in different spoken words, e.g., /b/ in ball, bug, and big.   | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>e.</b> Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.  |  |
| Identify whether pairs of phonemes are the same or different, including pairs that differ only in voicing, e.g., /b/ and /p/.                  | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).   |  |
| Orally blend two to three sounds to form a word, e.g., given the sounds /k/.../a/... /t/, blend to make cat.                                   | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>c.</b> Blend and segment onsets and rimes of single-syllable spoken words.  |  |
| Segment a spoken word into phonemes, e.g., given bat, produce the segments/b//a//t/.   | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>c.</b> Blend and segment onsets and rimes of single-syllable spoken words.  |  |
| Given a spoken word, produce another word that rhymes, e.g., given hit, supply bit or mitt.  | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>a.</b> Recognize and produce rhyming words.   |  |
| Identify the number of syllables in a spoken word.   | <b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>b.</b> Count, pronounce, blend, and segment syllables in spoken words.  |  |
| <b>C. Phonics: Decoding and Encoding</b>   |   |  |
| Demonstrate understanding that a systematic, predictable relationship exists between written letters (graphemes) and spoken sounds (phonemes). | <b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>a.</b> Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the primary or many of the most frequent sound for each consonant. |  |

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|--|---|--|
| <p>Blend individual phonemes to pronounce printed words.</p> <p>Understand that sometimes two or more printed letters stand for a single sound.</p> <p>Read and write any CVC word, e.g., sit or cat.</p> <p>Read and write one-syllable words containing common initial consonant clusters such as tr-, fl-, dr- and sp- and consonant digraphs such as ch-, sh-, th-, etc.</p> | <p><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>  |  |
| <p>Read and write words containing separated vowel graphemes, such as, late, bite, note, cute.</p>   | <p><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>b.</b> Associate the long and short sounds with common spellings (graphemes) for the five major vowels.</p>  |  |
| <p>Read tricky spellings that can be sounded two ways, e.g., the letter 's' sounded /s/ as in cats and /z/ as in dogs.</p>   | <p><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>  |  |
| <p>Read and write chains of one-syllable words in which one sound is added, substituted, or omitted, e.g., read at &gt; cat &gt; bat &gt; bad &gt; bid.</p>  | <p><b>RFK.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).</p> <p><b>e.</b> Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.</p> <p><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>d.</b> Distinguish between similarly spelled words by identifying the sounds of the letters that differ.</p> |  |
| <p>Read at least 15 words generally identified as very high frequency words.</p>   | <p><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>c.</b> Read common high-frequency words by sight (e.g., the, of, to, you, she, my, is, are, do, does).</p>   |  |
| <p><b>Consonant Sounds and Spellings Taught in Kindergarten</b></p>  |   |  |

| Core Knowledge Sequence<br>Kindergarten  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
|--|--|--|
| <p>/b/ spelled 'b' as in boy, 'bb', as in tubby<br/> /d/ spelled 'd' as in dog, 'dd' as in madder<br/> /f/ spelled 'f' as in fun, 'ff' as in stuff<br/> /g/ spelled 'g' as in get, 'gg' as in egg<br/> /h/ spelled 'h' as in him<br/> /j/ spelled 'j' as in jump<br/> /k/ spelled 'c' as in cat, 'k' as in kitten, 'ck' as in sick, 'cc' as in moccasin<br/> /l/ spelled 'l' as in lip, 'll' as in sell<br/> /m/ spelled 'm' as in mad, 'mm' as in hammer<br/> /n/ spelled 'n' as in net, 'nn' as in funny<br/> /p/ spelled 'p' as in pet, 'pp' as in happy<br/> /r/ spelled 'r' as in red, 'rr' as in earring<br/> /s/ spelled 's' as in sit, 'ss' as in dress<br/> /t/ spelled 't' as in top, 'tt' as in butter<br/> /v/ spelled 'v' as in vet<br/> /w/ spelled 'w' as in wet<br/> /x/ spelled 'x' as in tax<br/> /y/ spelled 'y' as in yes<br/> /z/ spelled 'z' as in zip, 'zz' as in buzz, 's' as in dogs<br/> /ch/ spelled 'ch' as in chop<br/> /sh/ spelled 'sh' as in ship<br/> /th/ spelled 'th' as in thin<br/> /th/ spelled 'th' as in then<br/> /qu/ spelled 'qu' as in quick<br/> /ng/ spelled 'ng' as in sing, 'n' as in pink</p> | <p><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>a.</b> Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the primary or many of the most frequent sound for each consonant.</p> |  |
| <b>Vowel Sounds and Spellings Taught in Kindergarten</b>   |  |  |

| Core Knowledge Sequence<br>Kindergarten  | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
|--|---|--|
| /a/ spelled 'a' as in cat<br>/e/ spelled 'e' as in get<br>/i/ spelled 'i' as in hit<br>/o/ spelled 'o' as in hot<br>/u/ spelled 'u' as in but<br>/ae/ spelled 'a_e' as in cake<br>/ee/ spelled 'ee' as in bee<br>/ie/ spelled 'i_e' as in bike<br>/oe/ spelled 'o_e' as in note<br>/ue/ spelled 'u_e' as in cute<br>/er/ spelled 'er' as in her.<br>/ar/ spelled 'ar' as in car<br>/or/ spelled 'or' as in for | <b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>b.</b> Associate the long and short sounds with common spellings (graphemes) for the five major vowels.   |  |
| <b>D. Oral Reading and Fluency</b>   |   |  |
| Read decodable stories that incorporate the specific code knowledge that has been taught.  | <b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.<br><b>RFK.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>c.</b> Read common high-frequency words by sight (e.g., the, of, to, you, she, my, is, are, do, does).<br><b>RFK.4</b> Read emergent-reader texts with purpose and understanding.   |  |
| Use phonics skills in conjunction with context to confirm or self-correct word recognition and understanding, rereading as necessary.  | <b>RLK.4</b> Ask and answer questions about unknown words in a text.<br><b>RIK.4</b> With prompting and support, ask and answer questions about unknown words in a text.<br><b>RFK.4</b> Read emergent-reader texts with purpose and understanding.<br><b>LK.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.<br><b>a.</b> Identify new meanings for familiar words and apply them accurately (e.g., knowing duck is a bird and learning the verb to duck).<br><b>LK.4</b> Determine or clarify the meaning of unknown and |  |

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|   | <p>multiple-meaning words and phrases based on kindergarten reading and content.</p> <p><b>b.</b> Use the most frequently occurring inflections and affixes (e.g., -ed, -s, re-, un-, pre-, -ful, -less) as a clue to the meaning of an unknown word.</p>  |  |
| Demonstrate understanding of and use commas and end punctuation while reading orally.   | <b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.   |  |
| Read aloud, alone, or with a partner at least 15 minutes each day.  | <b>RFK.4</b> Read emergent-reader texts with purpose and understanding.  |  |
| <b>E. Reading Comprehension – All Texts</b>   |  |  |
| Demonstrate understanding of simple decodable text after reading independently.   | <b>RFK.4</b> Read emergent-reader texts with purpose and understanding.  |  |
| <b>Grasping Specific Details and Key Ideas</b>  |  |  |
| Answer questions requiring literal recall and understanding of the details and/or facts (i.e., who, what, where, when, etc.) about a text that has been read independently. | <p><b>RLK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RIK.1</b> With prompting and support, ask and answer questions about key details in a text.</p>  |  |
| Retell or dramatize a story, using narrative language to describe characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence.   | <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.</p>  |  |
| Use narrative language to describe people, places, things, locations, events, actions, a scene or facts from a text that has been read independently.                       | <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.</p> <p><b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.</p> <p><b>SLK.4</b> Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.</p> <p><b>LK.1.</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>b.</b> Use frequently occurring nouns and verbs.</p> |  |

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| <b>Observing Craft and Structure</b>   |  |  |
| <p>Understand and use words and phrases from a text that has been read independently.</p>  | <p><b>RLK.4</b> Ask and answer questions about unknown words in a text.</p> <p><b>RIK.4</b> With prompting and support, ask and answer questions about unknown words in a text.</p> <p><b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p style="padding-left: 20px;"><b>b.</b> Use frequently occurring nouns and verbs.</p> <p><b>LK.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.</p> <p style="padding-left: 20px;"><b>a.</b> Identify new meanings for familiar words and apply them accurately (e.g., knowing duck is a bird and learning the verb to duck).</p> <p style="padding-left: 20px;"><b>b.</b> Use the most frequently occurring inflections and affixes (e.g., -ed, -s, re-, un-, pre-, -ful, -less) as a clue to the meaning of an unknown word.</p> <p><b>LK.5</b> With guidance and support from adults, explore word relationships and nuances in word meanings.</p> <p style="padding-left: 20px;"><b>b.</b> Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).</p> <p style="padding-left: 20px;"><b>d.</b> Distinguish shades of meaning among verbs describing the same general action (e.g., walk, march, strut, prance) by acting out the meanings.</p> |  |
| <b>Integrating Information and Evaluating Evidence</b>   |  |  |
| <p>Prior to reading, identify what they know and have learned that may be related to the specific story or topic to be read.</p> | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.</p> <p><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p>  |  |
| <p>Use pictures accompanying the written text to check and support understanding.</p>  | <p><b>RLK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RLK.2</b> With prompting and support, retell familiar stories, including key details.</p> <p><b>RLK.3</b> With prompting and support, identify characters, settings, and major events in a story.</p> <p><b>RLK.7</b> With prompting and support, describe the</p>   |  |



| Core Knowledge Sequence<br>Kindergarten  | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
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|  | <p>relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).</p> <p><b>RIK.1</b> With prompting and support, ask and answer questions about key details in a text.</p> <p><b>RIK.2</b> With prompting and support, identify the main topic and retell key details of a text.</p> <p><b>RIK.3</b> With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RIK.7</b> With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).</p>            |  |
| <p>Make predictions prior to and while reading, based on the title, pictures, and/or text read thus far and then compare the actual outcomes to predictions.</p> | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.</p> <p><b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p>   |  |
| <p>Identify who is telling a story or providing information in a text.</p>   | <p><b>RLK.6</b> With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.</p>  |  |
| <b>III. Writing</b>  |   |  |
| <p>Draw pictures to represent a preference or opinion.</p>   | <p><b>WK.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g. My favorite book is...).</p>  |  |
| <p>Write narratives, informative and explanatory texts, and offer an opinion through shared writing exercises.</p>   | <p><b>WK.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g. My favorite book is...).</p> <p><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p><b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.</p> |  |

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|   | <p><b>WK.6</b> With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including collaboration with peers.</p> <p><b>WK.7</b> Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them.)</p>  |  |
| With assistance, add details to writing.                                      | <p><b>WK.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g. My favorite book is...).</p> <p><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p><b>WK.3</b> Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.</p> <p><b>WK.5</b> With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.</p> |  |
| Create a title or caption to accompany a picture and/or shared writing.       | <p><b>WK.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p> <p><b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p style="padding-left: 40px;"><b>f.</b> Produce and expand complete sentences in shared language activities.</p>   |  |
| <b>IV. Language Conventions</b>   |  |  |
| Form letters, words, phrases and sentences to communicate thoughts and ideas. | <p><b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p style="padding-left: 40px;"><b>a.</b> Print many upper- and lowercase letters</p> <p><b>LK.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p style="padding-left: 40px;"><b>c.</b> Write a letter or letters for most consonant and</p>   |  |

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|   | short-vowel sounds (phonemes).   |   |
| Apply basic spelling conventions.<br>Use basic capitalization and punctuation in sentences to convey meaning.   | <b>LK.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.   |   |
| <b>A. Handwriting and Spelling</b>  |  |   |
| Hold a pencil with a pincer grasp and make marks on paper.  |  |   |
| Trace, copy, and print from memory the 26 letters of the alphabet accurately in both their upper-case and lower-case forms.   | <b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>a.</b> Print many upper- and lowercase letters  |   |
| Write own name.   |  |   |
| Write from left to right, leaving spaces between words, and top to bottom using return sweep.   |  |   |
| Begin to write phonemically plausible spellings for words that cannot be spelled correctly with current code knowledge, e.g., write bote for boat, sum for some, hunee for honey. | <b>LK.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>c.</b> Write a letter or letters for most consonant and short-vowel sounds (phonemes).<br><b>d.</b> Spell simple words phonetically, drawing on knowledge of sound-letter relationships.  |   |
| Write words, phrases, and sentences from dictation, applying phonics knowledge.   | <b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>f.</b> Produce and expand complete sentences in shared language activities.<br><b>LK.2</b> Produce and expand complete sentences in shared language activities.<br><b>d.</b> Spell simple words phonetically, drawing on knowledge of sound-letter relationships. |   |
| <b>B. Parts of Speech and Sentence Structure</b>  |  |   |
| Use and understand question words, i.e., what, where, when, who, how.   | <b>LK.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>d.</b> Understand and use question words (interrogatives) (e.g., who, what, where, when,  |   |

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|  | why, how).   |  |
| Form regular plural nouns by adding 's' or 'es',<br>i.e., dog, dogs, wish, wishes.                   | <b>LK.1</b> Demonstrate command of the conventions of<br>standard English grammar and usage when writing or<br>speaking.<br><b>c.</b> Form regular plural nouns orally by adding /s/ or<br>/es/ (e.g., dog, dogs; wish, wishes).   |  |
| Demonstrate understanding of frequently<br>occurring prepositions, i.e., to/from, in/out,<br>on/off. | <b>LK.1</b> Demonstrate command of the conventions of<br>standard English grammar and usage when writing or<br>speaking.<br><b>e.</b> Use the most frequently occurring prepositions<br>(e.g., to, from, in, out, on, off, for, of, by, with).   |  |
| Produce and expand complete sentences orally<br>and in shared writing exercises.                     | <b>WK.7</b> Participate in shared research and writing projects<br>(e.g., explore a number of books by a favorite author and<br>express opinions about them.)<br><b>LK.1</b> Demonstrate command of the conventions of<br>standard English grammar and usage when writing or<br>speaking.<br><b>f.</b> Produce and expand complete sentences in shared<br>language activities. |  |
| <b>C. Capitalization and Punctuation</b>   |  |  |
| Capitalize the first word in a sentence, the<br>pronoun I.   | <b>LK.2</b> Demonstrate command of the conventions of<br>standard English capitalization, punctuation, and spelling<br>when writing.<br><b>a.</b> Capitalize the first word in a sentence and the<br>pronoun I.  |  |
| Identify and use end punctuation, including<br>periods, question marks, and exclamation points.      | <b>LK.2</b> Demonstrate command of the conventions of<br>standard English capitalization, punctuation, and spelling<br>when writing.<br><b>b.</b> Recognize and name end punctuation.  |  |
| <b>V. Poetry</b>   |  |  |
| <b>A. Mother Goose and other Traditional Poems*</b>  |  |  |

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|---|---|--|
| <p>A Diller, A Dollar<br/>           Baa, Baa, Black Sheep<br/>           Diddle, Diddle, Dumpling<br/>           Early to Bed<br/>           Georgie Porgie<br/>           Hey Diddle Diddle<br/>           Hickory, Dickory, Dock<br/>           Hot Cross Buns<br/>           Humpty Dumpty<br/>           It's Raining, It's Pouring<br/>           Jack and Jill<br/>           Jack Be Nimble<br/>           Jack Sprat<br/>           Ladybug, Ladybug<br/>           Little Bo Peep<br/>           Little Boy Blue<br/>           Little Jack Horner<br/>           Little Miss Muffet<br/>           London Bridge Is Falling Down<br/>           Mary, Mary, Quite Contrary<br/>           Old King Cole<br/>           Old Mother Hubbard<br/>           One, Two, Buckle My Shoe<br/>           Pat-a-Cake<br/>           Rain, Rain, Go Away<br/>           Ride a Cock-Horse<br/>           Ring Around the Rosey<br/>           Rock-a-bye, Baby<br/>           Roses Are Red<br/>           See-Saw, Margery Daw<br/>           Simple Simon<br/>           Sing a Song of Sixpence<br/>           Star Light, Star Bright<br/>           There Was a Little Girl<br/>           There Was an Old Woman Who Lived in a Shoe<br/>           This Little Pig Went to Market<br/>           Three Blind Mice</p> | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br/> <b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p> |  |

| Core Knowledge Sequence<br>Kindergarten   | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
|---|---|--|
| <b>B. Other Poems, Old and New*</b>   |   |  |
| <p>April Rain Song (Langston Hughes)<br/> Happy Thought (Robert Louis Stevenson)<br/> I Do Not Mind You, Winter Wind (Jack Prelutsky)<br/> Mary Had a Little Lamb (Sara Josepha Hale)<br/> The More It Snows (A. A. Milne)<br/> My Nose (Dorothy Aldis)<br/> Rain (Robert Louis Stevenson)<br/> Three Little Kittens (Eliza Lee Follen)<br/> Time to Rise (Robert Louis Stevenson)<br/> Tommy (Gwendolyn Brooks)<br/> Twinkle Twinkle Little Star (Jane Taylor)</p> | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br/> <b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p> |  |
| <b>VI. Fiction</b>  |   |  |
| <b>A. Stories*</b>  |   |  |

| Core Knowledge Sequence Kindergarten   | Common Core State Standards covered at CK Grade Level   | Common Core State Standards covered above or below CK Grade Level |
|--|---|---|
| <p>The Bremen Town Musicians (Brothers Grimm)<br/> Chicken Little (also known as “Henny-Penny”)<br/> Cinderella (Charles Perrault)<br/> Goldilocks and the Three Bears<br/> How Many Spots Does a Leopard Have? (African folktale)<br/> King Midas and the Golden Touch<br/> The Legend of Jumping Mouse (Native American: Northern Plains legend)<br/> The Little Red Hen<br/> Little Red Riding Hood<br/> Momotaro: Peach Boy (Japanese folktale)<br/> Snow White and the Seven Dwarfs<br/> The Three Billy Goats Gruff<br/> The Three Little Pigs<br/> A Tug of War (African folktale)<br/> The Ugly Duckling (Hans Christian Andersen)<br/> The Velveteen Rabbit (Margery Williams)<br/> selections from Winnie-the-Pooh (A. A. Milne)<br/> The Wolf and the Kids (Brothers Grimm)</p> | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br/> <b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p> |   |
| <b>B. Aesop’s Fables*</b>  |   |   |
| <p>The Lion and the Mouse<br/> The Grasshopper and the Ants<br/> The Dog and His Shadow<br/> The Hare and the Tortoise</p>   | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br/> <b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p> |   |
| <b>C. American Folk Heroes and Tall Tales*</b>   |   |   |
| <p>Johnny Appleseed<br/> Casey Jones</p>   | <p><b>RLK.10</b> Actively engage in group reading activities with purpose and understanding.<br/> <b>RIK.10</b> Actively engage in group reading activities with purpose and understanding.</p> |   |
| <b>D. Literary Terms</b>   |   |   |
| <p>author<br/> illustrator</p>   |   |   |

| Core Knowledge Sequence<br>Kindergarten  | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
|--|---|--|
| <b>VII. Sayings and Phrases</b>  |   |  |
| <p>A dog is man's best friend.<br/>           April showers bring May flowers.<br/>           Better safe than sorry.<br/>           Do unto others as you would have them do unto you.<br/>           The early bird gets the worm.<br/>           Great oaks from little acorns grow.<br/>           Look before you leap.<br/>           A place for everything and everything in its place.<br/>           Practice makes perfect.<br/>           [It's] raining cats and dogs.<br/>           Where there's a will there's a way.</p>   | <p><b>LK.5</b> With guidance and support from adults, explore word relationships and nuances in word meanings.<br/> <b>LK.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts.</p> |  |
| <p>*Reading: Text complexity and the growth of comprehension</p> <p>The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade "staircase" of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.</p> <p>(Common Core State Standards for ENGLISH LANGUAGE ARTS &amp; Literacy in History/Social Studies, Science, and Technical Subjects, p. 8)</p> |   |  |
| <p>**The Core Knowledge Language Arts Program: Grade K Language Art Objectives for Listening and Learning</p>  |   |  |



| Core Knowledge Sequence<br>Grade 1  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| <b>A. Classroom Discussion</b>  |  |  |
| Participate in age appropriate activities involving listening and speaking.   | <b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.   |  |
| Speak clearly with volume appropriate to the setting.<br>Use agreed-upon rules for group discussions, i.e., look at and listen to the speaker, raise hand to speak, take turns, say “excuse me” or “please,” etc. | <b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.<br><b>a.</b> Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).  |  |
| Ask questions to clarify conversations, directions, exercises, and/or classroom routines.   | <b>SL1.2</b> Ask and answer questions about key details in a text read aloud or information presented orally or through other media.<br><b>SL1.3</b> Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.   |  |
| Carry on and participate in a conversation over at least six turns, staying on topic, initiating comments or responding to a partner’s comments, with either an adult or another child of the same age.           | <b>W1.5</b> With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.<br><b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.<br><b>b.</b> Build on others’ talk in conversations by responding to the comments of others through multiple exchanges. |  |
| Identify and express physical sensations, mental states, and emotions of self and others.   | <b>SL1.4</b> Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.   |  |
| Understand and use language to express spatial and temporal relationships (up, down, first, last, before, after, etc.).   | <b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>i.</b> Use frequently occurring prepositions (e.g., during, beyond, toward).  |  |
| Understand and use narrative language to describe people, places, things, locations, events, actions.   | <b>RL1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.<br><b>RL1.3</b> Describe characters, settings, and major events in   |  |

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|  | a story, using key details.<br><b>SL1.4</b> Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.   |  |
| Understand and use common sayings and phrases such as “Hit the nail on the head” and “Let the cat out of the bag” (see page 34). | <b>L1.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., I named my hamster Nibblet because she nibbles too much because she likes that).  |  |
| <b>B. Presentation of Ideas and Information</b>  |   |  |
| Follow multi-step, oral directions.  | <b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.<br><br><b>a.</b> Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).   |  |
| Give simple directions.  | <b>W1.2</b> Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.<br><b>SL1.6</b> Produce complete sentences when appropriate to task and situation.  |  |
| Provide simple explanations.   | <b>RI1.1</b> Ask and answer questions about key details in a text.<br><b>RI1.3</b> Describe characters, settings, and major events in a story, using key details.<br><b>RI1.1</b> Ask and answer questions about key details in a text.<br><b>RI1.2</b> Identify the main topic and retell key details of a text.<br><b>RI1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.<br><b>RI1.7</b> Use illustrations and details in a text to describe its key ideas.<br><b>RI1.8</b> Identify the reasons an author gives to support points in a text.<br><b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure. |  |

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|   | <p><b>W1.2</b> Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.</p> <p><b>W1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.</p> <p><b>SL1.4</b> Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.</p> <p><b>SL1.6</b> Produce complete sentences when appropriate to task and situation.</p> |  |
| <p>Recite a nursery rhyme, poem or song independently, using appropriate eye contact, volume and clear enunciation.</p>                                     | <p><b>RL1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RI.1.3</b> Describe characters, settings, and major events in a story, using key details.</p>  |  |
| <p>**Share writing with others (L.1.29).</p>  | <p><b>W1.5</b> With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.</p> <p><b>W1.6</b> With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.</p> <p><b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.</p>   |  |
| <p>Give oral presentations about personal experiences, topics of interest, and/or stories, using appropriate eye contact, volume and clear enunciation.</p> | <p><b>RL1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RI.1.3</b> Describe characters, settings, and major events in a story, using key details.</p> <p><b>RI.1.7</b> Use illustrations and details in a text to describe its key ideas.</p> <p><b>RI.1.8</b> Identify the reasons an author gives to support points in a text.</p> <p><b>SL1.4</b> Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.</p>   |  |
| <p><b>C. Comprehension and Discussion of Read-Alouds – All Texts</b></p>  |   |  |

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| Listen to and understand a variety of texts read aloud, including fictional stories, fairy tales, fables, historical narratives, drama, informational text, and poems. | <p><b>RL1.5</b> Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.</p> <p><b>RI1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI1.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p> |  |
| Distinguish the following genres of literature: fiction, nonfiction and drama.   | <p><b>RL1.5</b> Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.</p> <p><b>RI1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI1.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p> |  |
| <b>Grasping Specific Details and Key Ideas</b>   |   |  |
| Describe illustrations.  | <p><b>RI1.7</b> Use illustrations and details in a story to describe its characters, setting, or events.</p> <p><b>RI1.6</b> Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.</p> <p><b>RI1.7</b> Use illustrations and details in a text to describe its key ideas.</p>  |  |
| Sequence four to six pictures illustrating events in a read-aloud.   | <p><b>RI1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RI1.2</b> Identify the main topic and retell key details of a text.</p> <p><b>RI1.7</b> Use illustrations and details in a text to describe its key ideas.</p>   |  |
| Answer questions requiring literal recall and understanding of the details and/or facts of a read-aloud, i.e., who, what, where, when, etc.                            | <p><b>RI1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI1.1</b> Ask and answer questions about key details in a text.</p>   |  |
| Retell key details.  | <p><b>RI1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p>  |  |

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|   | <p><b>RI.2</b> Identify the main topic and retell key details of a text.</p> <p><b>RI.8</b> Identify the reasons an author gives to support points in a text.</p>   |  |
| <p>Ask questions to clarify information in a read-aloud.</p>  | <p><b>RI.1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI.1.1</b> Ask and answer questions about key details in a text.</p> <p><b>W1.5</b> With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.</p> <p><b>W1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>SL1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.</p> <p style="padding-left: 40px;"><b>c.</b> Ask questions to clear up any confusion about the topics and texts under discussion.</p> |  |
| <p>Use narrative language to describe people, places, things, locations, events, actions, a scene or facts in a read-aloud.</p> | <p><b>RI.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RI.3</b> Describe characters, settings, and major events in a story, using key details.</p> <p><b>W1.3</b> Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.</p>  |  |
| <b>Observing Craft and Structure</b>  |   |  |
| <p>Understand and use words and phrases heard in read-alouds.</p>   | <p><b>RI.4</b> Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.</p> <p><b>RI.4</b> Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.</p> <p><b>L1.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 1 reading and content, choosing flexibly from an array of strategies.</p> <p style="padding-left: 40px;"><b>a.</b> Use sentence-level context as a clue to the meaning of a word or phrase.</p>  |  |

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|  | <p><b>b.</b> Use frequently occurring affixes as a clue to the meaning of a word.</p> <p><b>L1.5</b> With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.</p> <p><b>b.</b> Define words by category and by one or more key attributes (e.g., a duck is a bird that swims; a tiger is a large cat with stripes).</p> <p><b>d.</b> Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings.</p> |  |
| <p>Compare and contrast similarities and differences within a single read-aloud or between two or more read-alouds.</p>                                  | <p><b>RI.9</b> Compare and contrast the adventures and experiences of characters in stories.</p> <p><b>RI.9</b> Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).</p>  |  |
| <p>Make personal connections to events or experiences in a read-aloud and/or make connections among several read-alouds.</p>                             | <p><b>RI.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RI.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p> <p><b>L1.5</b> With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.</p> <p><b>c.</b> Identify real-life connections between words and their use (e.g., note places at school that are cozy).</p>                             |  |
| <b>Integrating Information and Evaluating Evidence</b>   |  |  |
| <p>Prior to listening to a read-aloud, identify what they know and have learned that may be related to the specific story or topic to be read aloud.</p> | <p><b>RI.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p>   |  |
| <p>Use pictures accompanying the read-aloud to check and support understanding of the read-aloud.</p>  | <p><b>RI.1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p>   |  |

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|  | <p><b>RI.1.3</b> Describe characters, settings, and major events in a story, using key details.</p> <p><b>RI.1.7</b> Use illustrations and details in a story to describe its characters, setting, or events.</p> <p><b>RI.1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI.1.2</b> Identify the main topic and retell key details of a text.</p> <p><b>RI.1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RI.1.6</b> Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.</p> <p><b>RI.1.7</b> Use illustrations and details in a text to describe its key ideas.</p> |  |
| <p>Make predictions prior to and during a read-aloud, based on the title, pictures, and/or text heard thus far and then compare the actual outcomes to predictions.</p>  | <p><b>RI.1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI.1.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p>   |  |
| <p>Answer questions that require making interpretations, judgments, or giving opinions about what is heard in a read-aloud, including answering “why” questions that require recognizing cause/effect relationships.</p> | <p><b>W.1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.</p> <p><b>L.1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>g.</b> Use frequently occurring conjunctions (e.g., and, but, or, so, because).</p>   |  |
| <p>Interpret information that is presented orally and then ask additional questions to clarify information or the topic in the read-aloud.</p>   | <p><b>SL.1.3</b> Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.</p>   |  |
| <p>Identify who is telling a story or providing information in a text.</p>   | <p><b>RI.1.6</b> Identify who is telling the story at various points in a text.</p>  |  |
| <b>D. Comprehension and Discussion of Read-Alouds – Fiction, Drama, and Poetry</b>   |  |  |
| <p>Retell or dramatize a story, using narrative language to describe characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence.</p>   | <p><b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RI.1.2</b> Identify the main topic and retell key details of a</p>   |  |

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|  | text.   |  |
| Compare and contrast characters from different stories.  | <b>RI.1.9</b> Compare and contrast the adventures and experiences of characters in stories.   |  |
| Change some story events and provide a different story ending.   | <b>W1.3</b> Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.   |  |
| Create and tell an original story, using narrative language to describe characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence.  | <b>W1.3</b> Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.   |  |
| Distinguish fantasy from realistic text in a story.  | <b>RI.1.5</b> Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.  |  |
| **Evaluate and select read-alouds, books, or poems on the basis of personal choice for rereading (L.1.27).   | <b>RI.1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.<br><b>RII.10</b> With prompting and support, read informational texts appropriately complex for grade 1.  |  |
| Identify the moral or lesson of a fable, folktale, or myth.  | <b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.  |  |
| Demonstrate understanding of literary language (e.g., author, illustrator, characters, setting, plot, dialogue, personification, simile, and metaphor) and use some of these terms in retelling stories or creating their own stories. | <b>RI.1.6</b> Identify who is telling the story at various points in a text.  |  |
| Identify sensory language and how it is used to describe people, objects, places and events.   | <b>RI.1.4</b> Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.<br><b>SL1.4</b> Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.   |  |
| <b>E. Comprehension and Discussion of Read-Alouds: Non-Fiction and Informational Texts</b>   |   |  |
| Generate questions and seek information from multiple sources to answer questions.   | <b>RII.5</b> Know and use various text features (e.g., heading, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.<br><b>RII.6</b> Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.<br><b>RII.7</b> Use illustrations and details in a text to describe its |  |



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|   | <p>key ideas.</p> <p><b>W1.7</b> Participate in shared research and writing projects (e.g., explore a number of “how-to” books and use them to write a sequence of instructions)</p> <p><b>W1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>SL1.2</b> Ask and answer questions about key details in a text read aloud or information presented orally or through other media.</p>   |  |
| <p>Answer questions about the details of a nonfiction text, indicating which part of the text provided the information needed to answer specific questions.</p> | <p><b>SL1.2</b> Ask and answer questions about key details in a text read aloud or information presented orally or through other media.</p>  |  |
| <p>With assistance, categorize and organize facts and information within a given topic.</p>   | <p><b>RI1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RI1.6</b> Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.</p> <p><b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.</p> <p><b>W1.2</b> Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.</p> <p><b>W1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>L1.5</b> With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.</p> <p style="padding-left: 20px;"><b>a.</b> Sort common objects into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent.</p> |  |
| <p>With assistance, create and interpret timelines and lifelines related to read-alouds.</p>  | <p><b>RL1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RL1.3</b> Describe characters, settings, and major events in a story, using key details.</p>  |  |

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|  | <p><b>RI.2</b> Identify the main topic and retell key details of a text.</p> <p><b>RI.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.</p>   |  |
| <p>**Draw pictures, dictate, or write simple sentences to represent details or information from a read-aloud (L.1.24)</p>  | <p>Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.</p> <p><b>SL.5</b> Add drawings or other visual displays to descriptions when appropriate to task and situation.</p> |  |
| <p>Distinguish read-alouds that describe events that happened long ago from those that describe contemporary or current events.</p>  | <p><b>RI.7</b> Use illustrations and details in a text to describe its key ideas.</p>   |  |
| <b>II. Reading</b>   |   |  |
| <b>A. Print Awareness</b>  |   |  |
| <p>Demonstrate understanding that what is said can be written and that the writing system is a way of writing down sounds.</p> <p>Demonstrate understanding of directionality (left to right, return sweep, top to bottom, front to back).</p> <p>Identify the parts of books and function of each part (front cover, back cover, title page, table of contents).</p> <p>Demonstrate correct book orientation by holding book correctly and turning pages.</p> | <p><b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.</p>  |  |
| <p>Recognize that sentences in print are made up of separate words.</p>  | <p><b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.</p> <p><b>a.</b> Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).</p>   |  |
| <p>Understand that words are separated by spaces.</p>  | <p><b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.</p>  |  |
| <p>Distinguish letters, words, sentences, and stories.</p>   | <p><b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.</p> <p><b>a.</b> Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending</p>   |  |

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|  | punctuation).   |  |
| <p>Demonstrate understanding of basic print conventions by tracking and following print word for word when listening to text read aloud.</p> <p>Demonstrate understanding that the sequence of letters in a written word represents the sequence of sounds in the spoken word.</p>   | <b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.   |  |
| <p>Recognize and name the 26 letters of the alphabet in both their upper-case and lower-case forms.</p>  |   |  |
| <p>Say the letters of the alphabet in order, either in song or recitation.</p>   |   |  |
| <b>B. Phonemic Awareness</b>   |   |  |
| <p>Demonstrate understanding that words are made up of sequences of sounds.</p> <p>Demonstrate understanding that vowel sounds are produced with the mouth open and airflow unobstructed, whereas consonant sounds involve closing parts of the mouth and blocking the air flow.</p> <p>Given a pair of spoken words, select the one that is longer (i.e., contains more phonemes).</p>  | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).   |  |
| <p>In riddle games, supply words that begin with a target phoneme.</p> <p>Indicate whether a target phoneme is or is not present in the initial/medial/final position of a spoken word, e.g., hear /m/ at the beginning of mat and /g/ at the end of bag.</p> <p>Listen to one-syllable words and tell the beginning or ending sounds, e.g., given dog, identify initial /d/ or final /g/.</p> <p>Recognize the same phoneme in different spoken words, e.g., /b/ in ball, bug, and big.</p> | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><br>c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words. |  |
| <p>Identify whether pairs of phonemes are the same or different, including pairs that differ only in voicing, e.g., /b/ and /p/.</p>   | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).   |  |
| <p>Orally blend two to three sounds to form a word, e.g., given the sounds /k/... /a/.../t/, blend to</p>  | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).   |  |

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| make cat.  | <b>b.</b> Orally produce single-syllable words by blending sounds (phonemes), including consonant blends.  |  |
| Segment a spoken word into phonemes, e.g., given bat, produce the segments/b//a//t/.   | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>d.</b> Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).  |  |
| Given a spoken word, produce another word that rhymes, e.g., given hit, supply bit or mitt.  | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).  |  |
| Identify the number of syllables in a spoken word.   | <b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>d.</b> Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word.   |  |
| <b>C. Phonics: Decoding and Encoding</b>   |  |  |
| Demonstrate understanding that a systematic, predictable relationship exists between written letters (graphemes) and spoken sounds (phonemes). | <b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.  |  |
| Blend individual phonemes to pronounce printed words.<br>Understand that sometimes two or more printed letters stand for a single sound.       | <b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>b.</b> Decode regularly spelled one-syllable words.  |  |
| Read one to two syllable words containing any of the grapheme-phoneme correspondences listed below.  | <b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>b.</b> Decode regularly spelled one-syllable words.<br><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>e.</b> Decode two-syllable words following basic patterns by breaking the words into syllables. |  |
| Read and write words with inflectional endings, i.e., -s, -ed, -ing, -er, -est.  | <b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>f.</b> Read words with inflectional endings.<br><b>L1.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 1 reading and content, choosing flexibly from an array of strategies.                      |  |

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|  | <p><b>c.</b> Identify frequently occurring root words (e.g., look) and their inflectional forms (e.g., looks, looked, looking).</p>   |  |
| <p>Read, understand, and write contractions, i.e., isn't, I'm, can't, etc.</p>   | <p><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>g.</b> Recognize and read grade-appropriate irregularly spelled words.</p> |  |
| <p>Sort and classify words according to the spelling used to represent a specific phoneme.</p>   |   |  |
| <p>Read tricky spellings that can be sounded two ways, e.g., the letter 's' sounded /s/ as in cats and /z/ as in dogs.</p> <p>Read and spell chains of one-syllable words in which one sound is added, substituted, or omitted, i.e., read at &gt; cat &gt; bat &gt; bad &gt; bid.</p> | <p><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>  |  |
| <p>Read at least 30 words generally identified as high frequency words.</p>  | <p><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>g.</b> Recognize and read grade-appropriate irregularly spelled words.</p> |  |
| <p><b>Consonant Sounds and Spellings Taught in 1<sup>st</sup> Grade</b></p>  |   |  |

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| <p>/b/ spelled 'b' as in boy, 'bb'; as in tubby<br/> /d/ spelled 'd' as in dog, 'dd' as in madder, 'ed' as in filled<br/> /f/ spelled 'f' as in fun, 'ff' as in stuff<br/> /g/ spelled 'g' as in get, 'gg' as in egg<br/> /h/ spelled 'h' as in him<br/> /j/ spelled 'j' as in jump, 'g' as in gem, 'ge' as in fringe<br/> /k/ spelled 'c' as in cat, 'k' as in kitten, 'ck' as in sick, 'cc' as in moccasin<br/> /l/ spelled 'l' as in lip, 'll' as in sell<br/> /m/ spelled 'm' as in mad, 'mm' as in hammer<br/> /n/ spelled 'n' as in net, 'nn' as in funny, 'kn' as in knock<br/> /p/ spelled 'p' as in pet, 'pp' as in happy<br/> /r/ spelled 'r' as in red, 'rr' as in earring, 'wr' as in wrist<br/> /s/ spelled 's' as in sit, 'ss' as in dress, 'c' as in cent, 'ce' as in prince, 'se' as in rinse<br/> /t/ spelled 't' as in top, 'tt' as in butter, 'ed' as in asked<br/> /v/ spelled 'v' as in vet, 've' as in twelve<br/> /w/ spelled 'w' as in wet, 'wh' as in when<br/> /x/ spelled 'x' as in tax<br/> /y/ spelled 'y' as in yes<br/> /z/ spelled 'z' as in zip, 'zz' as in buzz, 's' as in dogs</p> | <p><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>   |  |
| <p>/ch/ spelled 'ch' as in chop, 'tch' as in itch<br/> /sh/ spelled 'sh' as in ship<br/> /th/ spelled 'th' as in thin<br/> /th/ spelled 'th' as in then<br/> /qu/ spelled 'qu' as in quick<br/> /ng/ spelled 'ng' as in sing, 'n' as in pink</p>  | <p><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>a.</b> Know the sound-spelling correspondences for common consonant digraphs.</p> |  |
| <p><b>Vowel Sounds and Spellings Taught in 1<sup>st</sup> Grade</b></p>   |  |  |

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|---|--|--|
| /a/ spelled 'a' as in cat<br>/e/ spelled 'e' as in get<br>/i/ spelled 'i' as in hit<br>/o/ spelled 'o' as in hot<br>/u/ spelled 'u' as in but   | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>a.</b> Distinguish long from short vowel sounds in spoken single-syllable words.<br><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.  |  |
| /ae/ spelled 'a_e' as in cake, 'ai' as in wait, 'ay' as in day, 'a' as in paper<br>/ee/ spelled 'ee' as in bee, 'e' as in me, 'y' as in funny, 'ea' as in beach, 'e_e' as in Pete, 'ie' as in cookie<br>/ie/ spelled 'i_e' as in bike, 'i' as in biting, 'y' as in try, 'ie' as in tie, 'igh' as in night<br>/oe/ spelled 'o_e' as in note, 'oa' as in boat, 'oe' as in toe, 'o' as in open, 'ow' as in snow<br>/ue/ spelled 'u_e' as in cute | <b>RF1.2</b> Demonstrate understanding of spoken words, syllables, and sounds (phonemes).<br><b>a.</b> Distinguish long from short vowel sounds in spoken single-syllable words.<br><b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.<br><b>c.</b> Know final –e and common vowel team conventions for representing long vowel sounds. |  |
| /aw/ spelled 'aw' as in paw<br>/oo/ spelled 'oo' as in look,<br>/oo/ spelled 'oo' as in soon<br>/ou/ spelled 'ou' as in shout<br>/oi/ spelled 'oi' as in oil<br>/er/ spelled 'er' as in her<br>/ar/ spelled 'ar' as is car<br>/or/ spelled 'or' as in for   | <b>RF1.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.  |  |
| <b>D. Oral Reading and Fluency</b>  |  |  |
| Read decodable stories that incorporate the specific code knowledge that has been taught.   | <b>RI.10</b> With prompting and support, read informational texts appropriately complex for grade 1.<br><b>RF1.4</b> Read with sufficient accuracy and fluency to support comprehension.   |  |
| Demonstrate increased accuracy, fluency, and expression on successive reading of a decodable text (50 wpm by the end of the year).  | <b>RF1.4</b> Read with sufficient accuracy and fluency to support comprehension.<br><b>b.</b> Read on-level text orally with accuracy, appropriate rate, and expression on successive readings.  |  |
| Use phonics skills in conjunction with context to confirm or self-correct word recognition and  | <b>RF1.4</b> Read with sufficient accuracy and fluency to support comprehension.   |  |

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| understanding, rereading as necessary.  | <b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.  |  |
| Demonstrate understanding of and use commas and end punctuation while reading orally.   | <b>RF1.4</b> Read with sufficient accuracy and fluency to support comprehension.<br><b>b.</b> Read on-level text orally with accuracy, appropriate rate, and expression on successive readings.   |  |
| Read aloud, alone, or with a partner at least 15 minutes each day.  | <b>RF1.4</b> Read with sufficient accuracy and fluency to support comprehension.  |  |
| <b>E. Reading Comprehension – All Texts</b>   |   |  |
| Demonstrate understanding of completely decodable text after reading independently  | <b>RF1.4</b> Read with sufficient accuracy and fluency to support comprehension.<br><b>a.</b> Read on-level text with purpose and understanding.  |  |
| <b>Grasping Specific Details and Key Ideas</b>  |   |  |
| Sequence four to six pictures illustrating events from a text that has been read independently.   | <b>RI.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.<br><b>RI.2</b> Identify the main topic and retell key details of a text.<br><b>RI.7</b> Use illustrations and details in a text to describe its key ideas.   |  |
| Answer questions requiring literal recall and understanding of the details and/or facts (i.e., who, what, where, when, etc.) about a text that has been read independently. | <b>RI.1</b> Ask and answer questions about key details in a text.<br><b>RI.1</b> Ask and answer questions about key details in a text.  |  |
| Retell key details from a text that has been read independently.  | <b>RI.1</b> Ask and answer questions about key details in a text.<br><b>RI.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.<br><b>RI.2</b> Identify the main topic and retell key details of a text.<br><b>RI.8</b> Identify the reasons an author gives to support points in a text. |  |
| Ask questions to clarify information about a text   | <b>RI.1</b> Ask and answer questions about key details in a   |  |



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| that has been read independently.   | text.<br><b>RI.1.1</b> Ask and answer questions about key details in a text.   |  |
| Use narrative language to describe people, places, things, locations, events, actions, a scene or facts from a text that has been read independently. | <b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.<br><b>RI.1.3</b> Describe characters, settings, and major events in a story, using key details.   |  |
| <b>Observing Craft and Structure</b>  |  |  |
| Identify basic text features and what they mean, including title, table of contents, and chapters.  | <b>RI.1.5</b> Know and use various text features (e.g., heading, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.  |  |
| Understand and use words and phrases from a text that has been read independently.  | <b>RI.1.4</b> Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.<br><b>RI.1.4</b> Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.<br><b>L1.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 1 reading and content, choosing flexibly from an array of strategies.<br><b>a.</b> Use sentence-level context as a clue to the meaning of a word or phrase.<br><b>b.</b> Use frequently occurring affixes as a clue to the meaning of a word.<br><b>L1.5</b> With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.<br><b>b.</b> Define words by category and by one or more key attributes (e.g., a duck is a bird that swims; a tiger is a large cat with stripes).<br><b>d.</b> Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings. |  |
| Compare and contrast similarities and differences within a single text or between multiple texts read independently.                                  | <b>RI.1.9</b> Compare and contrast the adventures and experiences of characters in stories.<br><b>RI.1.9</b> Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations,   |  |

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| <p>Make personal connections to events or experiences in a text that has been read independently and/or make connections among several texts that have been read independently.</p> | <p>descriptions, or procedures).</p> <p><b>RI.1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI.1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RI.1.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p> <p><b>L.1.5</b> With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.</p> <p><b>c.</b> Identify real-life connections between words and their use (e.g., note places at school that are cozy).</p>  |  |
| <b>Integrating Information and Evaluating Evidence</b>  |   |  |
| <p>Prior to reading, identify what they know and have learned that may be related to the specific story or topic to be read.</p>  | <p><b>RI.1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.</p> <p><b>RI.1.10</b> With prompting and support, read informational texts appropriately complex for grade 1.</p>  |  |
| <p>Use pictures accompanying the written text to check and support understanding.</p>   | <p><b>RI.1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>RI.1.3</b> Describe characters, settings, and major events in a story, using key details.</p> <p><b>RI.1.7</b> Use illustrations and details in a story to describe its characters, setting, or events.</p> <p><b>RI.1.1</b> Ask and answer questions about key details in a text.</p> <p><b>RI.1.2</b> Identify the main topic and retell key details of a text.</p> <p><b>RI.1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p><b>RI.1.6</b> Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.</p> <p><b>RI.1.7</b> Use illustrations and details in a text to describe its key ideas.</p> |  |
| <p>Make predictions prior to and while reading,</p>   | <p><b>RI.1.10</b> With prompting and support, read prose and</p>  |  |

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| based on the title, pictures, and/or text read thus far and then compare the actual outcomes to predictions.   | poetry of appropriate complexity for grade 1.<br><b>RI.10</b> With prompting and support, read informational texts appropriately complex for grade 1.   |  |
| Answer questions that require making interpretations, judgments, or giving opinions about what is read independently, including answering "why" questions that require recognizing cause/effect relationships. | <b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.<br><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>g.</b> Use frequently occurring conjunctions (e.g., and, but, or, so, because). |  |
| Identify who is telling a story or providing information in a text.  | <b>RI.1.6</b> Identify who is telling the story at various points in a text.  |  |
| Identify temporal words that link and sequence events, i.e., first, next, then, etc.   |   |  |
| Identify words that link ideas, i.e., for example, also, in addition.  | <b>RI.1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text.   |  |
| <b>F. Reading Comprehension- Fiction, Drama, and Poetry</b>  |   |  |
| Retell or dramatize a story, using narrative language to describe characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence.                                      | <b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.  |  |
| Compare and contrast characters from different stories.  | <b>RI.1.9</b> Compare and contrast the adventures and experiences of characters in stories.   |  |
| Change some story events and provide a different story ending.   |   |  |
| Distinguish fantasy from realistic text in a story.  | <b>RI.1.5</b> Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.  |  |
| **Evaluate and select read-alouds, books, or poems on the basis of personal choice for rereading (L.1.27).   | <b>RI.1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.<br><b>RI.1.10</b> With prompting and support, read informational texts appropriately complex for grade 1.   |  |
| Identify the moral or lesson of a fable, folktale, or myth.  | <b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or  |  |

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|  | lesson.  |  |
| Demonstrate understanding of literary language (e.g., author, illustrator, characters, setting, plot, dialogue, personification, simile, and metaphor) and use some of these terms in retelling stories or creating their own stories. | <b>RI.1.6</b> Identify who is telling the story at various points in a text.   |  |
| Identify sensory language and how it is used to describe people, objects, places and events.   | <b>RI.1.4</b> Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.  |  |
| <b>G. Reading Comprehension – Non-Fiction and Informational Texts</b>  |  |  |
| With assistance, create and interpret timelines and lifelines related to text read independently.  | <b>RI.1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.<br><b>RI.1.3</b> Describe characters, settings, and major events in a story, using key details.<br><b>RI.1.2</b> Identify the main topic and retell key details of a text.<br><b>RI.1.3</b> Describe the connection between two individuals, events, ideas, or pieces of information in a text. |  |
| Distinguish text that describes events that happened long ago from text that describes contemporary or current events.   | <b>RI.1.7</b> Use illustrations and details in a text to describe its key ideas.   |  |
| <b>III. Writing</b>  |  |  |
| <b>Writing to Reflect Audience, Purpose, and Task</b>  |  |  |
| Add details to writing.  | <b>W1.5</b> With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.   |  |
| Begin to use tools, including technology, to plan, draft, and edit writing.  | <b>W1.6</b> With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.   |  |
| <b>Conducting Research</b>   |  |  |
| Gather information from experiences or provided text sources.  | <b>W1.7</b> Participate in shared research and writing projects (e.g., explore a number of “how-to” books and use them to write a sequence of instructions)<br><b>W1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.  |  |

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| <b>A. Narrative Writing</b>   |   |  |
| Write or retell a story that includes characters, setting(s), and a beginning, a middle and an end to events of the story in proper sequence.               | <p><b>RL1.2</b> Retell stories, including key details, and demonstrate understanding of their central message or lesson.</p> <p><b>W1.3</b> Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.</p>   |  |
| Write a descriptive paragraph using sensory language.   |   |  |
| Create a title and an ending that are relevant to the narrative.  | <p><b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.</p> <p><b>W1.3</b> Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.</p> |  |
| <b>B. Informative/Explanatory Writing</b>   |   |  |
| Write about a topic, including a beginning and ending sentence, facts and examples relevant to the topic, and specific steps (if writing explanatory text). | <b>W1.2</b> Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.   |  |
| <b>C. Persuasive Writing (Opinion)</b>  |   |  |
| Express an opinion or point of view in writing, providing reasons and supporting details for preference or opinion using the linking word because.          | <b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.   |  |
| Create a title that is relevant to the topic or subject of the text.  | <b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.   |  |
| If writing about a specific book or read-aloud, refer to the content of the text.   | <b>W1.1</b> Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.   |  |
| <b>IV. Language Conventions</b>   |   |  |

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| Form letters, words, phrases and sentences to communicate thoughts and ideas.  | <b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>a.</b> Print many upper- and lowercase letters.  |  |
| Apply basic spelling conventions.  | <b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>d.</b> Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words.   |  |
| Use basic capitalization and punctuation in sentences to convey meaning.   |   |  |
| <b>A. Handwriting and Spelling</b>   |   |  |
| Print from memory the 26 letters of the alphabet accurately in both their upper-case and lower-case forms.   | <b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>a.</b> Print many upper- and lowercase letters.  |  |
| Write on primary lined paper from left to right, staying within the lines and leaving spaces between words, and from top to bottom, using return sweep.                |   |  |
| Write phonemically plausible spellings for words that cannot be spelled correctly with current code knowledge, e.g., write ate for eight, boi for boy, fone for phone. | <b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>e.</b> Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.  |  |
| Write words, phrases, and sentences from dictation, applying phonics knowledge.  | <b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>e.</b> Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.  |  |
| Identify and use synonyms and antonyms.  | <b>L1.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 1 reading and content, choosing flexibly from an array of strategies.<br><b>L1.5</b> With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings. |  |

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|   | <p><b>d.</b> Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings.</p>   |  |
| <b>B. Parts of speech and Sentence Structure</b>  |  |  |
| <p>Recognize, identify and use subject, object, and possessive pronouns, i.e., I, me, my, they, them, orally, in written text and in own writing.</p> | <p><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>b.</b> Use common, proper, and possessive nouns.</p> <p><b>d.</b> Use personal, possessive, and indefinite pronouns (e.g., I, me, my; they, them, their; anyone, everything).</p> <p><b>h.</b> Use determiners (e.g. articles, demonstratives)</p> |  |
| <p>Recognize, identify and use common and proper nouns, orally, in written text, and in own writing.</p>  | <p><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>c.</b> Use singular and plural nouns with matching verbs in basic sentences (e.g., He hops; We hop).</p>   |  |
| <p>Recognize, identify and use regular verbs to convey a sense of past, present, and future tense orally, in written text, and in own writing.</p>    | <p><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>e.</b> Use verbs to convey a sense of past, present, and future (e.g., Yesterday I walked home; Today I walk home; Tomorrow I will walk home).</p>   |  |
| <p>Recognize, identify, and use adjectives orally, in written text, and in own writing.</p>   | <p><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>f.</b> Use frequently occurring adjectives.</p>  |  |
| <p>Recognize, identify and use subjects and predicates, orally, in written text, and in own writing.</p>  | <p><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>j.</b> Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.</p>   |  |
| <p>Recognize, identify, and use statements, questions, and exclamations orally, in written</p>  | <p><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or</p>  |  |

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| text, and in own writing.  | speaking.<br><b>j.</b> Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.  |  |
| Produce and expand complete sentences orally and in shared writing exercises.  | <b>W1.7</b> Participate in shared research and writing projects (e.g., explore a number of “how-to” books and use them to write a sequence of instructions)<br><b>SL1.6</b> Produce complete sentences when appropriate to task and situation.<br><b>L1.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.<br><b>j.</b> Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts. |  |
| <b>C. Capitalization and Punctuation</b>   |   |  |
| Capitalize the first word in a sentence, the pronoun I, and proper nouns (names and places,) months, days of the week. | <b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.<br><b>a.</b> Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).<br><b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>a.</b> Capitalize dates and names of people.   |  |
| Identify and use end punctuation, including periods, question marks, and exclamation points.                           | <b>RF1.1</b> Demonstrate understanding of the organization and basic features of print.<br><b>a.</b> Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).<br><b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>b.</b> Use end punctuation for sentences.  |  |
| Use commas appropriately in greetings and closings of letters, dates, and items in a series.                           | <b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.  |  |



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|   | c. Use commas in dates and to separate single words in a series.   |  |
| Write a simple friendly letter.   |  |  |
| Use apostrophes to create contractions and indicate possession, i.e., cat's meow.   | <b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. |  |
| Use quotation marks appropriately to designate direct speech.   | <b>L1.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. |  |
| <b>V. Poetry*</b>   |  |  |
| <p>Hope (Langston Hughes)<br/> I Know All the Sounds the Animals Make (Jack Prelutsky)<br/> My Shadow (Robert Louis Stevenson)<br/> The Owl and the Pussycat (Edward Lear)<br/> The Pasture (Robert Frost)<br/> The Purple Cow (Gelett Burgess)<br/> Rope Rhyme (Eloise Greenfield)<br/> Sing a Song of People (Lois Lenski)<br/> Solomon Grundy (traditional)<br/> The Swing (Robert Louis Stevenson)<br/> Table Manners [also known as "The Goops"] (Gelett Burgess)<br/> Thanksgiving Day ["Over the river and through the wood"] (Lydia Maria Child)<br/> Washington (Nancy Byrd Turner)<br/> Wynken, Blynken, and Nod (Eugene Field)</p> | <b>RL1.10</b> With prompting and support, read prose and poetry of appropriate complexity for grade 1.                         |  |
| <b>VI. Fiction</b>  |  |  |
| <b>A. Stories*</b>  |  |  |

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| <p>The Boy at the Dike (folktale from Holland)<br/> The Frog Prince<br/> Hansel and Gretel<br/> selections from The House at Pooh Corner (A. A.Milne)<br/> How Anansi Got Stories from the Sky God (folktale from West Africa)<br/> It Could Always Be Worse (Yiddish folktale)<br/> Jack and the Beanstalk<br/> The Knee-High Man (African-American folktale)<br/> Medio Pollito (Hispanic folktale)<br/> The Pied Piper of Hamelin<br/> Pinocchio<br/> The Princess and the Pea<br/> Puss-in-Boots<br/> Rapunzel<br/> Rumpelstiltskin<br/> Sleeping Beauty<br/> The Tale of Peter Rabbit (Beatrix Potter)<br/> Tales of Br'er Rabbit (recommended tales: Br'er Rabbit Gets Br'er Fox's Dinner; Br'er Rabbit Tricks Br'er Bear; Br'er Rabbit and the Tar Baby)<br/> Why the Owl Has Big Eyes (Native American legend)</p> |  |  |
| <b>B. Aesop's Fables*</b>  |  |  |
| <p>The Boy Who Cried Wolf<br/> The Dog in the Manger<br/> The Wolf in Sheep's Clothing<br/> The Maid and the Milk Pail<br/> The Fox and the Grapes<br/> The Goose and the Golden Eggs</p>  |  |  |
| <b>C. Different Lands, Similar Stories*</b>  |  |  |

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| <p>Lon Po Po (China) and Little Red Riding Hood<br/>Issun Boshi, or One-Inch Boy (Japan); Tom<br/>Thumb (England); Thumbelina (by the<br/>Danish writer Hans Christian Andersen); Little<br/>Finger of the Watermelon Patch<br/>(Vietnam)<br/>Some of the many variations on the Cinderella<br/>story (from Europe, Africa, China,<br/>Vietnam, Egypt, Korea, etc.)</p>   |   |  |
| <b>D. Literary Terms</b>  |   |  |
| Characters, heroes, and heroines  |   |  |
| <p>Drama<br/>actors and actresses<br/>costumes, scenery and props<br/>theater, stage, audience</p>  |   |  |
| <b>VII. Sayings and Phrases</b>   |   |  |
| <p>A.M. and P.M.<br/>An apple a day keeps the doctor away.<br/>Do unto others as you would have them do unto<br/>you. [also in Kindergarten]<br/>Fish out of water<br/>Hit the nail on the head.<br/>If at first you don't succeed, try, try again.<br/>Land of Nod<br/>Let the cat out of the bag.<br/>The more the merrier.<br/>Never leave till tomorrow what you can do today.<br/>Practice makes perfect. [also in Kindergarten]<br/>Sour grapes<br/>There's no place like home..<br/>Wolf in sheep's clothing</p> | <p><b>RL1.4</b> Identify words and phrases in stories or poems<br/>that suggest feelings or appeal to the senses.<br/><b>L1.5</b> With guidance and support from adults,<br/>demonstrate understanding of word relationships and<br/>nuances in word meanings.<br/><b>L1.6</b> Use words and phrases acquired through<br/>conversations, reading and being read to, and responding<br/>to texts, including using frequently occurring<br/>conjunctions to signal simple relationships (e.g., I named<br/>my hamster Nibblet because she nibbles too much<br/>because she likes that).</p> |  |

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| <p><b>*Reading: Text complexity and the growth of comprehension</b><br/>           The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.<br/>           (Common Core State Standards for ENGLISH LANGUAGE ARTS &amp; Literacy in History/Social Studies, Science, and Technical Subjects, p. 8)</p> |  |  |
| <p><b>**The Core Knowledge Language Arts Program: Grade 1 Language Art Objectives for Listening and Learning</b></p>  |  |  |

| Core Knowledge Sequence<br>GRADE 2   | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level  |
|--|---|---|
| <b>I. Listening and Speaking</b>   |   |   |
| <b>A. Classroom Discussion</b>   |   |   |
| Maintain attention and actively participate in discussions about a variety of topics, ideas, and texts in both small and large group settings.           | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <ul style="list-style-type: none"> <li><b>a.</b> Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</li> <li><b>b.</b> Build on others' talk in conversations by linking their comments to the remarks of others.</li> <li><b>c.</b> Ask for clarification and further explanation as needed about the topics and texts under discussion.</li> </ul> |   |
| Speak clearly with volume appropriate to the setting.  | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <ul style="list-style-type: none"> <li><b>a.</b> Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</li> </ul>   |   |
| Use agreed-upon rules for group discussions, i.e., look at and listen to the speaker, raise hand to speak, take turns, say "excuse me" or "please," etc. | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <ul style="list-style-type: none"> <li><b>a.</b> Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion)</li> </ul>  |   |
| Ask questions to clarify conversations, directions, exercises, and/or classroom routines.  | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <ul style="list-style-type: none"> <li><b>c.</b> Ask for clarification and further explanation as needed about the topics and texts under discussion.</li> </ul>  |   |
| Carry on and participate in a conversation over at least six turns, staying on topic, initiating comments or responding to a partner's                   | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p>   | <p><b>SL4.3</b> Identify the reasons and evidence a speaker provides to support particular points.</p> <p><b>SL5.3</b> Summarize the points a speaker makes and explain</p> |

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| comments, with either an adult or another child of the same age.  | <p><b>b.</b> Build on others' talk in conversations by linking their comments to the remarks of others.</p> <p><b>SL2.6</b> Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on pages 26 and 27 for specific expectations.)</p>   | how each claim is supported by reasons and evidence.   |
| Participate in a conversation or group discussion by making reference to, or building upon, a comment made by another person.       | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p><b>b.</b> Build on others' talk in conversations by linking their comments to the remarks of others.</p>   | <p><b>SL4.3</b> Identify the reasons and evidence a speaker provides to support particular points.</p> <p><b>SL5.3</b> Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.</p> |
| Identify and express physical sensations, mental states, and emotions of self and others.   |   |  |
| Understand and use language to express spatial and temporal relationships (up, down, first, last, before, after, etc.).             |   |  |
| Understand and use narrative language to describe people, places, things, locations, events, actions.                               | <p><b>SL2.4</b> Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.</p>   |  |
| Understand and use common sayings and phrases such as "Don't judge a book by its cover" and "Better late than never" (see page 60). | <p><b>L2.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy).</p>  |  |
| <b>B. Presentation of Ideas and Information</b>   |   |  |
| Follow multi-step, oral directions.   | <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p><b>a.</b> Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</p>  |  |
| Give simple directions.   | <p><b>W2.2</b> Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.</p> <p><b>SL2.6</b> Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on pages 26 and 27 for specific expectations.)</p> | <p><b>SL3.6</b> Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</p>  |

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| Provide simple explanations.   | <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI.2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI.2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> <p><b>RI.2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> <p><b>RI.2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</p> <p><b>RI.2.8</b> Describe how reasons support specific points the author makes in a text.</p> <p><b>W.2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.</p> <p><b>W.2.2</b> Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.</p> <p><b>W.2.8</b> Recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>SL.2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p><b>SL.2.4</b> Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.</p> <p><b>SL.2.6</b> Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on pages 26 and 27 for specific expectations.)</p> |  |
| Recite a nursery rhyme, poem or song independently, using appropriate eye contact, volume and clear enunciation. | <p><b>RI.2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p>  |  |

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| Give oral presentations about personal experiences, topics of interest, stories, and summaries of factual information that have been presented orally, visually or through multimedia, using appropriate eye contact, volume and clear enunciation. | <p><b>RL2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>SL2.4</b> Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.</p>   | <p><b>SL3.4</b> Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.</p>  |
| <b>C. Comprehension and Discussion of Read-Alouds – All Texts</b>   |  |  |
| Listen to and understand a variety of texts read aloud, including fictional stories, fairy tales, fables, historical narratives, drama, informational text, and poems.  | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RL2.5</b> Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.</p> <p><b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> | <p><b>RI4.5</b> Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.</p> <p><b>RI5.5</b> Compare and contrast the overall structure (e.g., chronology, comparison cause/effect, problem/solution) of events, ideas, concepts or information in two or more texts.</p> |
| Distinguish the following genres of literature: fiction, nonfiction and drama.  | <p><b>RL2.5</b> Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.</p> <p><b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p>   |  |
| <b>Grasping Specific Details and Key Ideas</b>  |  |  |
| Describe illustrations.   | <p><b>RL2.7</b> Use information gained from the illustrations and words in a print or digital text to demonstrate</p>  | <p><b>RI3.7</b> Explain how specific aspects of a text’s illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a</p>   |



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|  | <p>understanding of its characters, setting, or plot.</p> <p><b>RI2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</p>   | <p>character or setting).</p> <p><b>RI3.7</b> Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).</p> |
| <p>Sequence four to six pictures illustrating events in a read aloud.</p>  | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p>   |  |
| <p>Answer questions requiring literal recall and understanding of the details and/or facts of a read-aloud, i.e., who, what, where, when, etc.</p> | <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p>   |  |
| <p>Retell key details.</p>   | <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> <p><b>RI2.8</b> Describe how reasons support specific points the author makes in a text.</p> <p><b>SL2.2</b> Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</p> |  |
| <p>Summarize in one's own words selected parts of a read-aloud.</p>  | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p>   |  |
| <p>Ask questions to clarify information in a read-aloud.</p>   | <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>W2.8</b> Recall information from experiences or gather</p>  |  |

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|   | <p>information from provided sources to answer a question.</p> <p><b>SL2.1</b> Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p style="padding-left: 40px;">c. Ask for clarification and further explanation as needed about the topics and texts under discussion.</p> <p><b>SL2.3</b> Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.</p>                 |  |
| <p>Use narrative language to describe people, places, things, locations, events, actions, a scene or facts in a read-aloud.</p> | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RL2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>W2.3</b> Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.</p>  |  |
| <b>Observing Craft and Structure</b>  |   |  |
| <p>Understand and use words and phrases heard in read-alouds.</p>   | <p><b>RL2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.</p> <p><b>RI2.4</b> Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.</p> <p><b>L2.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.</p> <p><b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> |  |
| <p>Compare and contrast similarities and differences within a single read-aloud or between two or more read-alouds.</p>         | <p><b>RI2.9</b> Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.</p> <p><b>RI2.9</b> Compare and contrast the most important points presented by two texts on the same topic.</p>  | <p><b>RI3.9</b> Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).</p> <p><b>RI3.9</b> Compare and contrast the most important points and key details presented in two texts on the same topic.</p> <p><b>RI4.7</b> Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific</p> |

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| <p>Make personal connections to events or experiences in a read-aloud and/or make connections among several read-alouds.</p>                             | <p><b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> <p><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> <p><b>SL2.5</b> Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.</p> | <p>descriptions and directions in the text.</p>                      |
| <b>Integrating Information and Evaluating Evidence</b>   |  |  |
| <p>Prior to listening to a read-aloud, identify what they know and have learned that may be related to the specific story or topic to be read aloud.</p> | <p><b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p>   |  |
| <p>Use pictures accompanying the read-aloud to check and support understanding of the read-aloud.</p>  | <p><b>RL2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RL2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>RL2.7</b> Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.</p>   |  |

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|  | <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI.2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> <p><b>RI.2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> <p><b>RI.2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</p>   |  |
| <p>Make predictions prior to and during a read-aloud, based on the title, pictures, and/or text heard thus far and then compare the actual outcomes to predictions.</p>  | <p><b>RL.2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI.2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p>  |  |
| <p>Answer questions that require making interpretations, judgments, or giving opinions about what is heard in a read-aloud, including answering “why” questions that require recognizing cause/effect relationships.</p> | <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI.2.6</b> Identify the main purpose of a text, including what the author wants to answer, explain, or describe.</p> <p><b>W.2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.</p> <p><b>L.2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> | <p><b>RI.3.3</b> Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.</p> <p><b>RI.3.8</b> Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).</p> |
| <p>Interpret information that is presented orally and then ask additional questions to clarify information or the topic in the read-aloud.</p>   | <p><b>SL.2.3</b> Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.</p>  |  |
| <p>Identify who is telling a story or providing information in a text.</p>   | <p><b>RL.2.6</b> Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.</p>  |  |
| <p><b>D. Comprehension and Discussion of Read-Alouds – Fiction, Drama, and Poetry</b></p>  |   |  |

| Core Knowledge Sequence<br>GRADE 2   | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level   |
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| Retell a story, using narrative language to describe characters, setting(s), and the plot of the story in proper sequence.   | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RL2.5</b> Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> | <b>RL3.3</b> Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.               |
| Compare and contrast characters from different stories.  | <b>RL2.9</b> Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.  | <b>RL3.9</b> Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series). |
| Describe characters in increasing depth by referring to dialogue and/or their actions in the story.  | <p><b>RL2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>RL2.6</b> Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.</p>  | <b>RL3.3</b> Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.               |
| Change some story events and provide a different story ending.<br>Create and tell an original story, using narrative language to describe characters, setting(s), and the plot of the story in proper sequence.                        | <b>W2.3</b> Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.  |  |
| Distinguish fantasy from realistic text in a story.  | <b>RL2.5</b> Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.  |  |
| Identify the moral or lesson of a fable, folktale, or myth.  | <b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.  |  |
| Demonstrate understanding of literary language (e.g., author, illustrator, characters, setting, plot, dialogue, personification, simile, and metaphor) and use some of these terms in retelling stories or creating their own stories. | <b>RL2.6</b> Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.  |  |
| Identify repetitions in phrases, refrains, or sounds in poems or songs.  | <b>RL2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.  |  |
| Identify sensory language and how it is used to describe people, objects, places and events.   | <p><b>RL2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.</p> <p><b>SL2.4</b> Tell a story or recount an experience with</p>  |  |

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|  | appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.   |   |
| Describe the use of rhyme, rhythm and sensory images used in poetry.   | <b>RI.2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.  |   |
| <b>E. Comprehension and Discussion of Read-Alouds – Non-Fiction and Informational Text</b>   |  |   |
| Generate questions and seek information from multiple sources to answer questions.   | <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI.2.5</b> Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.</p> <p><b>RI.2.6</b> Identify the main purpose of a text, including what the author wants to answer, explain, or describe.</p> <p><b>RI.2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</p> <p><b>W.2.7</b> Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).</p> <p><b>W.2.8</b> Recall information from experiences or gather information from provided sources to answer a question.</p> |   |
| Answer questions about the details of a nonfiction text, indicating which part of the text provided the information needed to answer specific questions. | <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>SL.2.2</b> Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</p>   |   |
| With assistance, categorize and organize facts and information within a given topic.   | <p><b>RI.2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> <p><b>W.2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.</p> <p><b>W.2.2</b> Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop</p>  | <p><b>RI.4.3</b> Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in text.</p> <p><b>RI.5.3</b> Explain the relationship or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information.</p> |

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|   | <p>points, and provide a concluding statement or section.</p> <p><b>W2.8</b> Recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p>  |   |
| <p>With assistance, create and interpret timelines and lifelines related to read-alouds.</p>  | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RL2.3</b> Describe how characters in a story respond to major events and challenges</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> <p><b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> |   |
| <p>Interpret information presented in diagrams, charts, graphs, etc.</p>  | <p><b>RI2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</p>  | <p><b>RI4.7</b> Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.</p> |
| <p>Distinguish read-alouds that describe events that happened long ago from those that describe contemporary or current events.</p>                   | <p><b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p>   |   |
| <b>II. Reading</b>  |  |   |
| <b>A. Phonics: Decoding and Encoding</b>  |  |   |
| <p>Demonstrate understanding that a systematic, predictable relationship exists between written letters (graphemes) and spoken sounds (phonemes).</p> | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>   |   |
| <p>Blend individual phonemes to pronounce printed words.</p>  | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>c.</b> Decode regularly spelled two-syllable words with long vowels.</p> <p><b>d.</b> Decode words with common prefixes and suffixes.</p>   |   |
| <p>Understand that sometimes two or more printed letters stand for a single sound.</p>  | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>a.</b> Distinguish long and short vowels when reading</p>   |   |

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|  | <p>regularly spelled one-syllable words.</p> <p><b>b.</b> Know spelling-sound correspondences for additional common vowel teams.</p> <p><b>c.</b> Decode regularly spelled two-syllable words with long vowels.</p> <p><b>d.</b> Decode words with common prefixes and suffixes.</p>   |  |
| Read multi-syllable words containing any of the grapheme-phoneme correspondences listed below.   | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>c.</b> Decode regularly spelled two-syllable words with long vowels.</p> <p><b>d.</b> Decode words with common prefixes and suffixes.</p>   |  |
| Read and write words with inflectional endings, i.e., -s, -ed, -ing, -er, -est.  | <p><b>L2.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.</p> <p><b>c.</b> Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional).</p> |  |
| Read, understand, and write contractions, i.e., isn't, I'm, can't, etc.  | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>f.</b> Recognize and read grade-appropriate irregularly spelled words.</p>  |  |
| Sort and classify words according to the spelling used to represent a specific phoneme.  |  |  |
| Read tricky spellings that can be sounded two ways, e.g., the letter 's' sounded /s/ as in cats and /z/ as in dogs.                      | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>e.</b> Identify words with inconsistent but common spelling-sound correspondences.</p>  |  |
| Read and spell chains of one-syllable words in which one sound is added, substituted, or omitted, i.e., read at > cat > bat > bad > bid. | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>   |  |
| <b>Consonant Sounds and Spellings Taught in Second Grade</b>   |  |  |



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| <p>/b/ spelled 'b' as in boy, 'bb', as in tubby</p> <p>/d/ spelled 'd' as in dog, 'dd' as in madder, 'ed' as in filled</p> <p>/f/ spelled 'f' as in fun, 'ff' as in stuff</p> <p>/g/ spelled 'g' as in get, 'gg' as in egg</p> <p>/h/ spelled 'h' as in him</p> <p>/j/ spelled 'j' as in jump, 'g' as in gem, 'ge' as in fringe</p> <p>/k/ spelled 'c' as in cat, 'k' as in kitten, 'ck' as in sick, 'cc' as in moccasin</p> <p>/l/ spelled 'l' as in lip, 'll' as in sell</p> <p>/m/ spelled 'm' as in mad, 'mm' as in hammer</p> <p>/n/ spelled 'n' as in net, 'nn' as in funny, 'kn' as in knock</p> <p>/p/ spelled 'p' as in pet, 'pp' as in happy</p> <p>/r/ spelled 'r' as in red, 'rr' as in earring, 'wr' as in wrist</p> <p>/s/ spelled 's' as in sit, 'ss' as in dress, 'c' as in cent, 'ce' as in prince, 'se' as in rinse</p> <p>/t/ spelled 't' as in top, 'tt' as in butter, 'ed' as in asked</p> <p>/v/ spelled 'v' as in vet, 've' as in twelve</p> <p>/w/ spelled 'w' as in wet, 'wh' as in when</p> <p>/x/ spelled 'x' as in tax</p> <p>/y/ spelled 'y' as in yes</p> <p>/z/ spelled 'z' as in zip, 'zz' as in buzz, 's' as in dogs</p> <p>/ch/ spelled 'ch' as in chop, 'tch' as in itch</p> <p>/sh/ spelled 'sh' as in ship</p> <p>/th/ spelled 'th' as in thin</p> <p>/th/ spelled 'th' as in then</p> <p>/qu/ spelled 'qu' as in quick</p> <p>/ng/ spelled 'ng' as in sing, 'n' as in pink</p> | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words</p> |  |
| <p><b>Vowel Sounds and Spellings Taught in Second Grade</b></p>  |   |  |

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| <p>/a/ spelled 'a' as in cat<br/> /e/ spelled 'e' as in get, 'ea' as in head<br/> /i/ spelled 'i' as in hit, 'y' as in myth<br/> /o/ spelled 'o' as in hot, 'a' as in wall<br/> /u/ spelled 'u' as in but, 'o' as in son</p>  | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>a.</b> Distinguish long and short vowels when reading regularly spelled one-syllable words.</p>  |  |
| <p>/ae/ spelled 'a_e' as in cake, 'ai' as in wait, 'ay' as in day, 'a' as in paper, 'ey' as in hey, 'ei' as in weight, 'ea' as in great<br/> /ee/ spelled 'ee' as in bee, 'e' as in me, 'y' as in funny, 'ea' as in beach, 'e_e' as in Pete, 'ie' as in cookie, 'i' as in ski, 'ey' as in key<br/> /ie/ spelled 'i_e' as in bike, 'i' as in biting, 'y' as in try, 'ie' as in tie, 'igh' as in night<br/> /oe/ spelled 'o_e' as in note, 'oa' as in boat, 'oe' as in toe, 'o' as in open, 'ow' as in snow<br/> /ue/ spelled 'u_e' as in cute, 'u' as in unit, 'ue' as in cue</p>  | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p><b>a.</b> Distinguish long and short vowels when reading regularly spelled one-syllable words.</p> <p><b>b.</b> Know spelling-sound correspondences for additional common vowel teams.</p> <p><b>c.</b> Decode regularly spelled two-syllable words with long vowels.</p> |  |
| <p>/aw/ spelled 'aw' as in paw, 'au' as in Paul, 'augh' as in caught, 'ough' as in bought<br/> /oo/ spelled 'oo' as in look, 'u' as in student, 'ue' as in blue, 'ui' as in fruit, 'ew' as in new, 'u_e' as in tune<br/> /oo/ spelled 'oo' as in soon<br/> /ou/ spelled 'ou' as in shout, 'ow' as in now<br/> /oi/ spelled 'oi' as in oil, 'oy' as in toy<br/> /er/ spelled 'er' as in her, 'ur' as in hurt, 'ir' as in bird, 'ar' as in dollar<br/> /ar/ spelled 'ar' as in car<br/> /or/ spelled 'or' as in for, 'ore' as in more, 'our' as in four, 'oor' as in door<br/> Schwa spelled 'a' as in about<br/> /shun/ spelled 'tion' as in mention</p> | <p><b>RF2.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p>  |  |
| <b>B. Oral Reading and Fluency</b>  |   |  |
| <p>Read decodable stories that incorporate the specific code knowledge that has been taught.</p>  | <p><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed</p>   |  |

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|  | <p>at the high end of the range.</p> <p><b>RF2.4</b> Read with sufficient accuracy and fluency to support comprehension.</p>  |  |
| <p>Demonstrate increased accuracy, fluency, and expression on successive reading of a decodable text (90 wpm by the end of the year).</p>    | <p><b>RF2.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <ul style="list-style-type: none"> <li><b>a.</b> Read on-level text with purpose and understanding.</li> <li><b>b.</b> Read on-level text orally with accuracy, appropriate rate, and expression on successive readings.</li> <li><b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</li> </ul>   | <p><b>RF3.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <ul style="list-style-type: none"> <li><b>a.</b> Read on-level text with purpose and understanding.</li> <li><b>b.</b> Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings</li> <li><b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</li> </ul> <p><b>SL3.5</b> Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.</p>   |
| <p>Use phonics skills in conjunction with context to confirm or self-correct word recognition and understanding, rereading as necessary.</p> | <p><b>RF2.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <ul style="list-style-type: none"> <li><b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</li> </ul> <p><b>L2.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use sentence-level context as a clue to the meaning of a word or phrase.</li> <li><b>b.</b> Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., happy/unhappy, tell/retell).</li> <li><b>c.</b> Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional).</li> <li><b>d.</b> Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., birdhouse, lighthouse, housefly; bookshelf, notebook, bookmark).</li> <li><b>e.</b> Use glossaries and beginning dictionaries, both</li> </ul> | <p><b>RF3.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <ul style="list-style-type: none"> <li><b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</li> </ul> <p><b>RF4.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <ul style="list-style-type: none"> <li><b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</li> </ul> <p><b>RF5.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <ul style="list-style-type: none"> <li><b>c.</b> Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</li> </ul> |

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|  | <p>print and digital, to determine or clarify the meaning of words and phrases.</p> <p><b>RI2.4</b> Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.</p>   |  |
| <p>Demonstrate understanding of and use commas and end punctuation while reading orally.</p>   | <p><b>RF2.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <p><b>b.</b> Read on-level text orally with accuracy, appropriate rate, and expression on successive readings.</p>  |  |
| <p>Read aloud, alone, or with a partner at least 20 minutes each day.</p>  | <p><b>RF2.4</b> Read with sufficient accuracy and fluency to support comprehension.</p>   |  |
| <b>C. Reading Comprehension – All Texts</b>  |   |  |
| <p>Demonstrate understanding of text—the majority of which is decodable—after independent reading.</p>   | <p><b>RF2.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <p><b>a.</b> Read on-level text with purpose and understanding.</p>   | <p><b>RF3.4</b> Read with sufficient accuracy and fluency to support comprehension.</p> <p><b>a.</b> Read on-level text with purpose and understanding</p> |
| <b>Grasping Specific Details and Key Ideas</b>   |   |  |
| <p>Sequence four to six pictures illustrating events from a text that has been read independently.</p>   | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p>   |  |
| <p>Answer questions requiring literal recall and understanding of the details and/or facts (i.e., who, what, where, when, etc.) about a text that has been read independently.</p> | <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p>   |  |
| <p>Retell key details from a text that has been read independently.</p>  | <p><b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> <p><b>RI2.8</b> Describe how reasons support specific points the</p> |  |

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|   | author makes in a text.  |   |
| Summarize in one's own words selected parts of a text.  | <b>RI.2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.  |   |
| Ask questions to clarify information about a text that has been read independently.   | <b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.<br><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.   |   |
| Use narrative language to describe people, places, things, locations, events, actions, a scene or facts from a text that has been read independently. | <b>RI.2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.<br><b>RI.2.3</b> Describe how characters in a story respond to major events and challenges   |   |
| <b>Observing Craft and Structure</b>  |  |   |
| Identify basic text features and what they mean, including title, table of contents, chapter headings and captions.                                   | <b>RI.2.5</b> Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.<br><b>RI.2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.  | <b>RI.3.5</b> Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections. |
| Understand and use words and phrases from a text that has been read independently.  | <b>RI.2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.<br><b>RI.2.4</b> Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.<br><b>L.2.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.<br><b>a.</b> Use sentence-level context as a clue to the meaning of a word or phrase.<br><b>c.</b> Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional).<br><b>L.2.5</b> Demonstrate understanding of word relationships |   |

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|  | <p>and nuances in word meanings.</p> <ul style="list-style-type: none"> <li><b>a.</b> Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).</li> <li><b>b.</b> Distinguish shades of meaning among closely related verbs (e.g., toss, throw, hurl) and closely related adjectives (e.g., thin, slender, skinny, scrawny).</li> </ul> <p><b>L2.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy).</p>  |  |
| <p>Compare and contrast similarities and differences within a single text or between multiple texts read independently.</p>  | <p><b>RI2.9</b> Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.</p> <p><b>RI2.9</b> Compare and contrast the most important points presented by two texts on the same topic.</p>  | <p><b>RI3.9</b> Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).</p> <p><b>RI3.9</b> With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).</p> <p><b>RI5.9</b> Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.</p> |
| <p>Make personal connections to events or experiences in a text that has been read independently and/or make connections among several texts that have been read independently</p> | <p><b>RI2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> <p><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> <ul style="list-style-type: none"> <li><b>a.</b> Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).</li> </ul> |  |

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| <b>Integrating Information and Evaluating Evidence</b>   |  |  |
| Prior to reading, identify what they know and have learned that may be related to the specific story or topic to be read.  | <p><b>RI.2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI.2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p>   |  |
| Use pictures accompanying the written text to check and support understanding.   | <p><b>RI.2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</p>   |  |
| Make predictions prior to and while reading, based on the title, pictures, and/or text read thus far and then compare the actual outcomes to predictions.  | <p><b>RI.2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RI.2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p>   |  |
| Answer questions that require making interpretations, judgments, or giving opinions about what is read independently, including answering “why” questions that require recognizing cause/effect relationships. | <p><b>RI.2.8</b> Describe how reasons support specific points the author makes in a text.</p> <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p> <p><b>W.2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.</p> <p><b>L.2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> |  |
| Interpret information that is read independently and then ask questions to clarify this information.   | <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate</p>  |  |

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|   | <p>understanding of key details in a text.</p> <p><b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.</p>  |  |
| <p>Identify who is telling a story or providing information in a text.</p>  | <p><b>RI.2.6</b> Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.</p>  |  |
| <p>Identify temporal words that link and sequence events, i.e., first, next, then, etc.</p>                                       |   | <p><b>L.3.6</b> Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them).</p> |
| <p>Identify words that link ideas, i.e., for example, also, in addition.</p>  | <p><b>RI.2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p>   |  |
| <b>D. Reading Comprehension – Fiction, Drama, and Poetry</b>  |   |  |
| <p>Retell a story, using narrative language to describe characters, setting(s), and the plot of the story in proper sequence.</p> | <p><b>RI.2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RI.2.5</b> Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.</p> |  |
| <p>Compare and contrast characters from different stories.</p>  | <p><b>RI.2.9</b> Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.</p>  | <p><b>RI.3.9</b> Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).</p>   |
| <p>Describe characters in increasing depth by referring to dialogue and/or their actions in the story.</p>                        | <p><b>RI.2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>RI.2.6</b> Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.</p>  |  |
| <p>Change some story events and provide a different story ending.</p>   |   |  |
| <p>Distinguish fantasy from realistic text in a story.</p>  | <p><b>RI.2.5</b> Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.</p>  |  |
| <p>Identify the moral or lesson of a fable, folktale, or myth.</p>  | <p><b>RI.2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p>  |  |



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| Demonstrate understanding of literary language (e.g., author, illustrator, characters, setting, plot, dialogue, personification, simile, and metaphor) and use some of these terms in retelling stories or creating their own stories. | <b>RL2.6</b> Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.  |  |
| Identify sensory language and how it is used to describe people, objects, places, and events.  | <b>RL2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.  |  |
| Identify repetitions in phrases, refrains, or sounds in poems or songs.  | <b>RL2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.  |  |
| Describe the use of rhyme, rhythm and sensory images used in poetry.   | <b>RL2.4</b> Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.  |  |
| <b>E. Reading Comprehension – Non-Fiction and Informational Text</b>   |   |  |
| Generate questions and seek information from multiple sources to answer questions.   | <b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.   |  |
| Answer questions about the details of a nonfiction text, indicating which part of the text provided the information needed to answer specific questions.   | <b>RI2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.<br><b>RI2.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.   |  |
| Interpret information presented in diagrams, charts, graphs, etc.  | <b>RI2.7</b> Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.  |  |
| With assistance, categorize and organize facts and information for a given topic.  | <b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.<br><b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.<br><b>W2.2</b> Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop |  |

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|   | <p>points, and provide a concluding statement or section.</p> <p><b>W2.8</b> Recall information from experiences or gather information from provided sources to answer a question.</p> <p><b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p>   |  |
| <p>With assistance, create and interpret timelines and lifelines related to text read independently.</p>                      | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>RI2.3</b> Describe how characters in a story respond to major events and challenges.</p> <p><b>RI2.2</b> Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.</p> <p><b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p> |  |
| <p>Distinguish text that describes events that happened long ago from text that describes contemporary or current events.</p> | <p><b>RI2.3</b> Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</p>  |  |
| <b>III. Writing</b>   |   |  |
| <b>Writing to Reflect Audience, Purpose, and Task</b>   |   |  |
| <p>Add details to writing.</p>  | <p><b>W2.5</b> With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.</p>  |  |
| <p>Begin to use tools, including technology, to plan, draft, and edit writing.</p>  | <p><b>W2.5</b> With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.</p> <p><b>W2.6</b> With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.</p>  | <p><b>W3.6</b> With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others</p> <p><b>W4.6</b> With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.</p> <p><b>W5.6</b> With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.</p> |
| <b>Conducting Research</b>  |   |  |

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| Gather information from experiences or provided text sources.   | <p><b>W2.7</b> Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).</p> <p><b>W2.8</b> Recall information from experiences or gather information from provided sources to answer a question.</p>   | <b>W3.8</b> Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. |
| <b>A. Narrative Writing</b>   |  |   |
| Write a familiar story that includes setting(s), character(s), dialogue, and if appropriate, several events, using temporal words and phrases to indicate the chronology of events. | <p><b>RL2.2</b> Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.</p> <p><b>W2.3</b> Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.</p>  |   |
| Write a personal narrative.   | <p><b>W2.3</b> Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.</p>  |   |
| Create a title and an ending that are relevant to the narrative.  | <p><b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.</p> <p><b>W2.3</b> Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.</p> |   |
| <b>B. Informative/Explanatory Writing</b>   |  |   |
| Write about a topic, including a beginning and ending sentence, facts and examples relevant to the topic, and specific steps (if writing explanatory text).                         | <p><b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.</p> <p><b>W2.2</b> Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.</p>   |   |
| Group similar information into paragraphs.  | <p><b>W2.2</b> Write informative/explanatory texts in which they</p>   |   |

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|   | introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.  |   |
| Use linking words such as also, another, and, etc. to connect ideas within a paragraph.   | <b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. |   |
| <b>C. Persuasive Writing (Opinion)</b>  |   |   |
| Express an opinion or point of view in writing, providing reasons and supporting details for preference or opinion.<br><br>Use words to link opinions with reasons or supporting details, such as because, also, another. | <b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. | <b>RL3.6</b> Distinguish their own point of view from that of the narrator or those of the characters.<br><br><b>RI3.6</b> Distinguish their own point of view from that of the author of a text. |
| Create a title that is relevant to the topic or subject of the text.  | <b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. |   |
| If writing about a specific book or read-aloud, refer to the content of the text.   | <b>W2.1</b> Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. |   |
| <b>IV. Language Conventions</b>   |   |   |
| Form sentences and paragraphs to communicate thoughts and ideas.  | <b>L2.3</b> Use knowledge of language and its conventions when writing, speaking, reading, or listening.<br><b>a.</b> Compare formal and informal uses of English.  |   |
| Apply basic spelling conventions.   | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>d.</b> Generalize learned spelling patterns when writing words (e.g., cage → badge; boy → boil).   |   |
| Use basic capitalization and punctuation in sentences to convey meaning.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>a.</b> Capitalize holidays, product names, and geographic  |   |

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| <b>A. Spelling</b>   |  |  |
| Write phonemically plausible spellings for words using current code knowledge, e.g., write doller for dollar, wate for wait or weight.         | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.   |  |
| Write words, phrases, and sentences from dictation, applying phonics knowledge.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.   |  |
| Alphabetize words to the second letter.  |  |  |
| Use a children’s dictionary, with assistance, to check spelling and verify the meaning of words.   | <p><b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ul style="list-style-type: none"> <li><b>e.</b> Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.</li> </ul> <p><b>L2.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.</p> <ul style="list-style-type: none"> <li><b>e.</b> Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.</li> </ul> |  |
| Identify and use synonyms, antonyms, homophones, and compound words.   | <p><b>L2.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.</p> <p><b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> <ul style="list-style-type: none"> <li><b>b.</b> Distinguish shades of meaning among closely related verbs (e.g., toss, throw, hurl) and closely related adjectives (e.g., thin, slender, skinny, scrawny).</li> </ul>   |  |
| <b>B. Parts of Speech and Sentence Structure</b>   |  |  |
| Recognize, identify and use subject, object, and possessive pronouns, i.e., I, me, my, they, them, orally, in written text and in own writing. | <b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.   |  |
| Recognize, identify and use correct noun-pronoun agreement orally, in written text and in own writing.   | <b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.   |  |

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|   | <ul style="list-style-type: none"> <li>a. Use collective nouns (e.g., group).</li> <li>b. Form and use frequently occurring irregular plural nouns (e.g., feet, children, teeth, mice, fish).</li> <li>c. Use reflexive pronouns (e.g., myself, ourselves).</li> </ul>   |  |
| Recognize, identify and use common and proper nouns, orally, in written text, and in own writing.   | <p><b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li>a. Use collective nouns (e.g., group).</li> </ul>   |  |
| Recognize, identify, and use the articles a and an appropriately orally, in written text and in own writing.  | <p><b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p>  |  |
| Recognize, identify and use selected regular and irregular plural nouns orally, in written text and in own writing.   | <p><b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li>b. Form and use frequently occurring irregular plural nouns (e.g., feet, children, teeth, mice, fish).</li> </ul>   |  |
| Recognize, identify and use selected regular and irregular past, present, and future tense verbs orally, in written text, and in own writing.                             | <p><b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li>d. Form and use the past tense of frequently occurring irregular verbs (e.g., sat, hid, told).</li> </ul>   |  |
| Recognize, identify, and use adjectives orally, in written text, and in own writing.<br>Recognize, identify, and use adverbs orally, in written text, and in own writing. | <p><b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li>e. Use adjectives and adverbs, and choose between them depending on what is to be modified.</li> </ul>  |  |
| Recognize, identify and use subjects and predicates, orally, in written text, and in own writing.   |  |  |
| Recognize, identify, and use statements, questions, and exclamations orally, in written text, and in own writing.   |  |  |
| Recognize, identify, and use complete simple and compound sentences.  | <p><b>L2.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li>f. Produce, expand, and rearrange complete simple and compound sentences (e.g., The boy watched the movie; The little boy watched the movie; The</li> </ul> |  |

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|  | action movie was watched by the little boy).   |  |
| <b>C. Capitalization and Punctuation</b>   |  |  |
| Capitalize the first word in a sentence, the pronoun I, and proper nouns (names and places,) months, days of the week, titles of people, and addresses.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>a.</b> Capitalize holidays, product names, and geographic                           |  |
| Recognize, identify and use abbreviations with correct punctuation for the months, days of the week, titles of people, and addresses.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.   |  |
| Identify and use end punctuation, including periods, question marks, and exclamation points.   | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.   |  |
| Use commas appropriately in greetings and closings of letters, dates, items in a series, and addresses.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>b.</b> Use commas in greetings and closings of letters.                             |  |
| Write a simple friendly letter.  |  |  |
| Use apostrophes to create contractions and indicate possession, i.e., cat's meow.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.<br><b>c.</b> Use an apostrophe to form contractions and frequently occurring possessives. |  |
| Use quotation marks appropriately to designate direct speech.  | <b>L2.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.   |  |
| <b>V. Poetry*</b>  |  |  |
| Bed in Summer (Robert Louis Stevenson)<br>Bee! I'm expecting you (Emily Dickinson)<br>Buffalo Dusk (Carl Sandburg)<br>Caterpillars (Aileen Fisher)<br>Discovery (Harry Behn)<br>Harriet Tubman (Eloise Greenfield)<br>Hurt No Living Thing (Christina Rossetti)<br>Lincoln (Nancy Byrd Turner) | <b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.        | *Specifically listed in CCSS (Grade 3)                               |

| Core Knowledge Sequence<br>GRADE 2  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| <p>The Night Before Christmas (Clement Clarke Moore)</p> <p>Rudolph Is Tired of the City (Gwendolyn Brooks)</p> <p>Seashell (Federico Garcia Lorca)</p> <p>Smart (Shel Silverstein)</p> <p>Something Told the Wild Geese (Rachel Field)</p> <p>There Was an Old Man with a Beard (Edward Lear)</p> <p>Who Has Seen the Wind? (Christina Rossetti)</p> <p>Windy Nights (Robert Louis Stevenson)</p>  |  |  |
| <b>VI. Fiction</b>  |  |  |
| <b>A. Stories*</b>  |  |  |
| <p>Beauty and the Beast</p> <p>The Blind Men and the Elephant (a fable from India)</p> <p>A Christmas Carol (Charles Dickens)</p> <p>Charlotte’s Web (E. B. White)</p> <p>The Emperor’s New Clothes (Hans Christian Andersen)</p> <p>The Fisherman and His Wife (Brothers Grimm)</p> <p>How the Camel Got His Hump (a “Just-So” story by Rudyard Kipling)</p> <p>Iktomi stories (legends of the Plains Indian trickster figure, such as Iktomi Lost His Eyes; Iktomi and the Berries; Iktomi and the Boulder)</p> <p>The Magic Paintbrush (a Chinese folktale)</p> <p>El Pajaro Cu (a Hispanic folktale)</p> <p>selections from Peter Pan (James M. Barrie)</p> <p>Talk (a West African folktale)</p> <p>The Tiger, the Brahman, and the Jackal (a folktale from India)</p> <p>The Tongue-Cut Sparrow (a folktale from Japan)</p> | <p><b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> | <p>*Specifically listed in CCSS (Grade 3)</p>                        |
| <b>B. Mythology of Ancient Greece*</b>  |  |  |
| <p>Gods of Ancient Greece and Rome</p> <p>Zeus (Jupiter)</p>  |  |  |



| Core Knowledge Sequence<br>GRADE 2  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| Hera (Juno)<br>Apollo (Apollo)<br>Artemis (Diana)<br>Poseidon (Neptune)<br>Aphrodite (Venus)<br>Demeter (Ceres)<br>Ares (Mars)<br>Hermes (Mercury)<br>Athena (Minerva)<br>Hephaestus (Vulcan)<br>Dionysus (Bacchus)<br>Eros (Cupid)<br>Hades (Pluto)  |  |  |
| Mount Olympus: home of the gods   |  |  |
| Mythological creatures and characters<br>Atlas (holding the world on his shoulders)<br>centaurs<br>Cerberus<br>Pegasus<br>Pan   |  |  |
| Greek Myths<br>Prometheus (how he brought fire from the gods to men)<br>Pandora's Box<br>Oedipus and the Sphinx<br>Theseus and the Minotaur<br>Daedalus and Icarus<br>Arachne the Weaver<br>Swift-footed Atalanta<br>Demeter and Persephone<br>Hercules (Heracles) and the Labors of Hercules | <b>RL.2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range. |  |
| <b>C. American Folk Heroes and Tall Tales*</b>  |  |  |

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|--|--|--|
| Paul Bunyan<br>Johnny Appleseed<br>John Henry<br>Pecos Bill<br>Casey Jones   | <b>RL2.10</b> By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.  |  |
| <b>D. Literary Terms</b>   |  |  |
| myth   |  |  |
| tall tale  |  |  |
| limerick   |  |  |
| <b>VII. Sayings and Phrases</b>  |  |  |
| Back to the drawing board<br>Better late than never<br>Cold feet<br>Don't cry over spilled milk.<br>Don't judge a book by its cover.<br>Easier said than done<br>Eaten out of house and home<br>Get a taste of your own medicine<br>Get up on the wrong side of the bed<br>In hot water<br>Keep your fingers crossed.<br>Practice what you preach.<br>The real McCoy<br>Two heads are better than one.<br>Turn over a new leaf<br>Where there's a will there's a way.<br>You can't teach an old dog new tricks.  | <b>L2.5</b> Demonstrate understanding of word relationships and nuances in word meanings.<br><br><b>L2.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy). |  |
| <p>*Reading: Text complexity and the growth of comprehension</p> <p>The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.</p> <p>(Common Core State Standards for ENGLISH LANGUAGE ARTS &amp; Literacy in History/Social Studies, Science, and Technical Subjects, p. 8)</p> |  |  |

| Core Knowledge Sequence<br>GRADE 3  | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level   |
|---|---|--|
| <b>I. Reading and Writing</b>   |   |  |
| <b>A. Reading Comprehension and Response</b>  |   |  |
| Independently read and comprehend longer works of fiction (“chapter books”) and nonfiction appropriately written for third grade or beyond. | <p><b>RL3.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 2–3 text complexity band independently and proficiently.</p> <p><b>RI3.10</b> By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently.</p>   |  |
| Point to specific words or passages that are causing difficulties in comprehension.   |   |  |
| Orally summarize main points from fiction and nonfiction readings.  | <p><b>RL3.2</b> Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.</p> <p><b>RI3.2</b> Determine the main idea of a text; recount the key details and explain how they support the main idea.</p> <p><b>SL3.2</b> Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.</p> | <p><b>SL4.2</b> Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, qualitatively, and orally.</p> <p><b>SL4.5</b> Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas and themes.</p> <p><b>RL5.2</b> Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.</p> <p><b>RI5.2</b> Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.</p> <p><b>SL5.2</b> Summarize a written text read aloud or information presented in diverse media and formats, including visually, qualitatively, and orally.</p> <p><b>SL5.5</b> Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.</p> |
| Ask and pose plausible answers to how, why, and what-if questions in interpreting texts, both fiction and nonfiction.                       | <p><b>RL3.1</b> Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</p> <p><b>RI3.1</b> Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as</p>  | <p><b>RL4.1</b> Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p><b>RI4.1</b> Refer to details and examples in a text when explaining what the text says explicitly and when drawing</p>  |

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|--|--|--|
|  | <p>the basis for the answers.</p> <p><b>SL3.1</b> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.</p> <ul style="list-style-type: none"> <li><b>a.</b> Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</li> <li><b>b.</b> Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</li> <li><b>c.</b> Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.</li> <li><b>d.</b> Explain their own ideas and understanding in light of the discussion.</li> </ul> <p><b>SL3.3</b> Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.</p> | <p>inferences from the text.</p> <p><b>RI5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p><b>RI5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.</p> |
| <p>Use a dictionary to answer questions regarding meaning and usage of words with which he or she is unfamiliar.</p> | <p><b>RI3.4</b> Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.</p> <p><b>L3.4</b> Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use sentence-level context as a clue to the meaning of a word or phrase.</li> <li><b>b.</b> Determine the meaning of the new word formed when a known affix is added to a known word (e.g., agreeable/disagreeable, comfortable/uncomfortable, care/careless, heat/preheat).</li> <li><b>c.</b> Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).</li> <li><b>d.</b> Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.</li> </ul>  |  |
| <p>Know how to use a table of contents and index to</p>  | <p><b>RI3.5</b> Use text features and search tools (e.g., key words,</p>   |  |

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| locate information.   | sidebars, hyperlinks) to locate information relevant to a given topic efficiently.   |  |
| <b>B. Writing</b>   |  |  |
| <p>Produce a variety of types of writing—such as stories, reports, poems, letters, descriptions—and make reasonable judgments about what to include in his or her own written works based on the purpose and type of composition.</p> | <p><b>W3.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.</li> <li><b>b.</b> Provide reasons that support the opinion.</li> <li><b>c.</b> Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.</li> <li><b>d.</b> Provide a concluding statement or section.</li> </ul> <p><b>W3.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.</li> <li><b>b.</b> Develop the topic with facts, definitions, and details.</li> <li><b>c.</b> Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.</li> <li><b>d.</b> Provide a concluding statement or section.</li> </ul> <p><b>W3.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <ul style="list-style-type: none"> <li><b>a.</b> Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.</li> <li><b>b.</b> Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.</li> <li><b>c.</b> Use temporal words and phrases to signal event order.</li> <li><b>d.</b> Provide a sense of closure.</li> </ul> <p><b>W3.4</b> With guidance and support from adults, produce writing in which the development and organization are</p> |  |

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|--|---|--|
|  | <p>appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p> <p><b>W3.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> <p><b>L3.3</b> Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <ul style="list-style-type: none"> <li><b>a.</b> Choose words and phrases for effect.</li> <li><b>b.</b> Recognize and observe differences between the conventions of spoken and written standard English.</li> </ul> |  |
| <p>Know how to gather information from basic print sources (such as a children’s encyclopedia), and write a short report presenting the information in his or her own words.</p> | <p><b>W3.7</b> Conduct short research projects that build knowledge about a topic.</p> <p><b>W3.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p>  |  |
| <p>Know how to use established conventions when writing a friendly letter: heading, salutation (greeting), closing, signature.</p>   | <p><b>W3.4</b> With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p> <p><b>W3.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p>  |  |
| <p>Produce written work with a beginning, middle, and end.</p>   | <p><b>W3.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.</li> <li><b>b.</b> Provide reasons that support the opinion.</li> <li><b>c.</b> Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.</li> <li><b>d.</b> Provide a concluding statement or section.</li> </ul> <p><b>W3.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p>                            |  |

| Core Knowledge Sequence<br>GRADE 3  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
|   | <p><b>a.</b> Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.</p> <p><b>b.</b> Develop the topic with facts, definitions, and details.</p> <p><b>c.</b> Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.</p> <p><b>d.</b> Provide a concluding statement or section.</p> <p><b>W3.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p><b>a.</b> Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.</p> <p><b>b.</b> Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.</p> <p><b>c.</b> Use temporal words and phrases to signal event order.</p> <p><b>d.</b> Provide a sense of closure.</p> <p><b>W3.4</b> With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p> <p><b>W3.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> |  |
| <p>Organize material in paragraphs and understand how to use a topic sentence</p> <p>How to develop a paragraph with examples and details that each new paragraph is indented</p> | <p><b>W3.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons.</p> <p><b>a.</b> Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.</p> <p><b>b.</b> Provide reasons that support the opinion.</p> <p><b>c.</b> Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.</p>  |  |

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|--|---|--|
|  | <p><b>d.</b> Provide a concluding statement or section.</p> <p><b>W3.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p><b>a.</b> Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.</p> <p><b>b.</b> Develop the topic with facts, definitions, and details.</p> <p><b>c.</b> Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.</p> <p><b>d.</b> Provide a concluding statement or section.</p> <p><b>W3.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p><b>a.</b> Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.</p> <p><b>b.</b> Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.</p> <p><b>c.</b> Use temporal words and phrases to signal event order.</p> <p><b>d.</b> Provide a sense of closure.</p> <p><b>W3.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> |  |
| <p>In some writings, proceed with guidance through a process of gathering information, organizing thoughts, composing a draft, revising to clarify and refine his or her meaning, and proofreading with attention to spelling, mechanics, and presentation of a final draft.</p> | <p><b>W3.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons.</p> <p><b>a.</b> Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.</p> <p><b>b.</b> Provide reasons that support the opinion.</p> <p><b>c.</b> Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.</p> <p><b>d.</b> Provide a concluding statement or section.</p> <p><b>W3.2</b> Write informative/explanatory texts to examine a</p>   |  |



| Core Knowledge Sequence<br>GRADE 3   | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
|--------------------------------------|---|--|
|                                      | <p>topic and convey ideas and information clearly.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.</li> <li><b>b.</b> Develop the topic with facts, definitions, and details.</li> <li><b>c.</b> Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.</li> <li><b>d.</b> Provide a concluding statement or section.</li> </ul> <p><b>W3.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <ul style="list-style-type: none"> <li><b>a.</b> Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.</li> <li><b>b.</b> Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.</li> <li><b>c.</b> Use temporal words and phrases to signal event order.</li> <li><b>d.</b> Provide a sense of closure.</li> </ul> <p><b>W3.4</b> With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p> <p><b>W3.5</b> With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 3 on pages 28 and 29.)</p> <p><b>W3.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> |  |
| <b>C. Spelling Grammar and Usage</b> |   |  |

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|---|--|--|
| <p>Spell most words correctly or with a highly probable spelling, and use a dictionary to check and correct spellings about which he or she is uncertain.</p> <p>Use capital letters correctly.</p>   | <p><b>L3.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ul style="list-style-type: none"> <li><b>a.</b> Capitalize the first word in a sentence and the pronoun I.</li> <li><b>b.</b> Recognize and name end punctuation.</li> <li><b>c.</b> Write a letter or letters for most consonant and short-vowel sounds (phonemes).</li> <li><b>d.</b> Spell simple words phonetically, drawing on knowledge of sound-letter relationships.</li> </ul>   |  |
| <p>Understand what a complete sentence is, and identify subject and predicate in single-clause sentences distinguish complete sentences from fragments</p>  | <p><b>L3.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.</li> <li><b>b.</b> Form and use regular and irregular plural nouns.</li> <li><b>c.</b> Use abstract nouns (e.g., childhood).</li> <li><b>d.</b> Form and use regular and irregular verbs.</li> <li><b>e.</b> Form and use the simple (e.g., I walked; I walk; I will walk) verb tenses.</li> <li><b>f.</b> Ensure subject-verb and pronoun-antecedent agreement.*</li> <li><b>g.</b> Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.</li> <li><b>h.</b> Use coordinating and subordinating conjunctions.</li> <li><b>i.</b> Produce simple, compound, and complex sentences.</li> </ul> |  |
| <p>Identify and use different sentence types:<br/>           declarative (makes a statement)<br/>           interrogative (asks a question)<br/>           imperative (gives a command)<br/>           exclamatory (for example, "What a hit!")</p> | <p><b>L3.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.</li> <li><b>b.</b> Form and use regular and irregular plural nouns.</li> <li><b>c.</b> Use abstract nouns (e.g., childhood).</li> <li><b>d.</b> Form and use regular and irregular verbs.</li> <li><b>e.</b> Form and use the simple (e.g., I walked; I walk; I</li> </ul>  |  |

| Core Knowledge Sequence<br>GRADE 3  | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
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|   | <p>will walk) verb tenses.</p> <p><b>f.</b> Ensure subject-verb and pronoun-antecedent agreement.*</p> <p><b>g.</b> Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.</p> <p><b>h.</b> Use coordinating and subordinating conjunctions.</p> <p><b>i.</b> Produce simple, compound, and complex sentences.</p>   |  |
| <p>Know the following parts of speech and how they are used:</p> <p>nouns (for concrete nouns)</p> <p>pronouns (singular and plural)</p> <p>verbs: action verbs and auxiliary (helping) verbs</p> <p>adjectives (including articles: a before a consonant, an before a vowel, and the)</p> <p>adverbs</p>                     | <p><b>L3.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>a.</b> Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.</p> <p><b>b.</b> Form and use regular and irregular plural nouns.</p> <p><b>c.</b> Use abstract nouns (e.g., childhood).</p> <p><b>d.</b> Form and use regular and irregular verbs.</p> <p><b>e.</b> Form and use the simple (e.g., I walked; I walk; I will walk) verb tenses.</p> <p><b>f.</b> Ensure subject-verb and pronoun-antecedent agreement.*</p> <p><b>g.</b> Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.</p> <p><b>h.</b> Use coordinating and subordinating conjunctions.</p> <p><b>i.</b> Produce simple, compound, and complex sentences.</p> |  |
| <p>Know how to use the following punctuation:</p> <p>end punctuation: period, question mark, or exclamation point</p> <p>comma: between day and year when writing a date; between city and state in an address; in a series; after yes and no</p> <p>apostrophe: in contractions; in singular and plural possessive nouns</p> | <p><b>L3.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p><b>a.</b> Capitalize appropriate words in titles.</p> <p><b>b.</b> Use commas in addresses.</p> <p><b>c.</b> Use commas and quotation marks in dialogue.</p> <p><b>d.</b> Form and use possessives.</p> <p><b>e.</b> Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., sitting, smiled, cries, happiness).</p> <p><b>f.</b> Use spelling patterns and generalizations (e.g.,</p>   |  |

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|  | <p>word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words.</p> <p><b>g.</b> Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.</p>  |  |
| Recognize and avoid the double negative.   |  |  |
| <b>D. Vocabulary</b>   |  |  |
| <p>Know what prefixes and suffixes are and how the following affect word meaning:</p> <p><b>Prefixes:</b><br/> re meaning “again” (as in reuse, refill)<br/> un meaning “not” (as in unfriendly, unpleasant)<br/> dis meaning “not” (as in dishonest, disobey)<br/> un meaning “opposite of” or “reversing an action” (as in untie, unlock)<br/> dis meaning “opposite of” or “reversing an action” (as in disappear, dismount)</p> <p><b>Suffixes:</b><br/> er and or (as in singer, painter, actor)<br/> less (as in careless, hopeless)<br/> ly (as in quickly, calmly)</p> | <p><b>RF3.3</b> Know and apply grade-level phonics and word analysis skills in decoding words.</p> <ol style="list-style-type: none"> <li>Identify and know the meaning of the most common prefixes and derivational suffixes.</li> <li>Decode words with common Latin suffixes.</li> <li>Decode multisyllable words.</li> <li>Read grade-appropriate irregularly spelled words.</li> </ol> <p><b>L3.4</b> Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.</p> <ol style="list-style-type: none"> <li>Use sentence-level context as a clue to the meaning of a word or phrase.</li> <li>Determine the meaning of the new word formed when a known affix is added to a known word (e.g., agreeable/disagreeable, comfortable/uncomfortable, care/careless, heat/preheat).</li> <li>Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).</li> <li>Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.</li> </ol> <p><b>L3.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> <ol style="list-style-type: none"> <li>Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., take steps).</li> <li>Identify real-life connections between words and their use (e.g., describe people who are friendly or helpful).</li> </ol> |  |

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|   | <p><b>c.</b> Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., knew, believed, suspected, heard, wondered).</p>  |  |
| <p>Know what homophones are (for example, by, buy; hole, whole) and correct usage of homophones that commonly cause problems:<br/> their, there, they're<br/> your, you're<br/> its, it's<br/> here, hear<br/> to, too, two</p> | <p><b>L3.4</b> Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use sentence-level context as a clue to the meaning of a word or phrase.</li> <li><b>b.</b> Determine the meaning of the new word formed when a known affix is added to a known word (e.g., agreeable/disagreeable, comfortable/uncomfortable, care/careless, heat/preheat).</li> <li><b>c.</b> Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).</li> <li><b>d.</b> Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.</li> </ul> <p><b>L3.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> <ul style="list-style-type: none"> <li><b>a.</b> Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., take steps).</li> <li><b>b.</b> Identify real-life connections between words and their use (e.g., describe people who are friendly or helpful).</li> <li><b>c.</b> Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., knew, believed, suspected, heard, wondered).</li> </ul> |  |
| <p>Recognize common abbreviations (for example, St., Rd., Mr., Mrs., Ms., Dr., U.S.A., ft., in., lb.).</p>  |  |  |
| <p><b>II. Poetry*</b></p>   |  |  |

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| <p>Adventures of Isabel (Ogden Nash)<br/> The Bee (Isaac Watts; see also below, “The Crocodile”)<br/> By Myself (Eloise Greenfield)<br/> Catch a Little Rhyme (Eve Merriam)<br/> The Crocodile (Lewis Carroll)<br/> Dream Variations (Langston Hughes)<br/> Eletelephony (Laura Richards)<br/> Father William (Lewis Carroll)<br/> First Thanksgiving of All (Nancy Byrd Turner)<br/> For want of a nail, the shoe was lost . . . (traditional)<br/> Jimmy Jet and His TV Set (Shel Silverstein)<br/> Knoxville, Tennessee (Nikki Giovanni)<br/> Trees (Sergeant Joyce Kilmer)</p>  |  |  |
| <b>III. Fiction</b>   |  |  |
| <b>A. Stories*</b>  |  |  |
| <p>Alice in Wonderland (Lewis Carroll)<br/> from The Arabian Nights:<br/> Aladdin and the Wonderful Lamp<br/> Ali Baba and the Forty Thieves<br/> The Hunting of the Great Bear (an Iroquois legend about the origin of the Big Dipper)<br/> The Husband Who Was to Mind the House (a Norse/English folktale, also known as “Gone is Gone”)<br/> The Little Match Girl (Hans Christian Andersen)<br/> The People Who Could Fly (an African American folktale)<br/> Three Words of Wisdom (a folktale from Mexico)<br/> William Tell<br/> selections from The Wind in the Willows: “The River Bank” and<br/> “The Open Road” (Kenneth Grahame)</p> |  |  |
| Norse Mythology   |  |  |

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| Asgard (home of the gods)<br>Valhalla<br>Hel (underworld)<br>Odin<br>Thor<br>trolls<br>Norse gods and English names for days of the week: Tyr, Odin [Wodin], Thor, Frigg [Freya]   |  |  |
| More Myths and Legends of Ancient Greece and Rome<br>Jason and the Golden Fleece<br>Perseus and Medusa<br>Cupid and Psyche<br>The Sword of Damocles<br>Damon and Pythias<br>Androcles and the Lion<br>Horatius at the Bridge |  |  |
| <b>C. Literary terms</b>   |  |  |
| biography and autobiography  |  |  |
| Fiction and nonfiction   |  |  |
| <b>IV. Sayings and Phrases</b>   |  |  |

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| <p>Actions speak louder than words.<br/>His bark is worse than his bite.<br/>Beat around the bush<br/>Beggars can't be choosers.<br/>Clean bill of health<br/>Cold shoulder<br/>A feather in your cap<br/>Last straw<br/>Let bygones be bygones.<br/>One rotten apple spoils the whole barrel.<br/>On its last legs<br/>Rule the roost<br/>The show must go on.<br/>Touch and go<br/>When in Rome do as the Romans do.<br/>Rome wasn't built in a day.</p>   | <p><b>RL3.4</b> Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.</p> <p><b>L3.5</b> Demonstrate understanding of word relationships and nuances in word meanings.</p> <ul style="list-style-type: none"> <li><b>a.</b> Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., take steps).</li> <li><b>b.</b> Identify real-life connections between words and their use (e.g., describe people who are friendly or helpful).</li> <li><b>c.</b> Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., knew, believed, suspected, heard, wondered).</li> </ul> <p><b>L3.6</b> Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them).</p> |  |
| <p>*Reading: Text complexity and the growth of comprehension</p> <p>The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.</p> <p>(Common Core State Standards for ENGLISH LANGUAGE ARTS &amp; Literacy in History/Social Studies, Science, and Technical Subjects, p. 8)</p> |   |  |



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| <b>I. Writing, Grammar, and Usage</b>   |  |  |
| <b>A. Writing and Research</b>  |  |  |
| <p>Produce a variety of types of writing—including stories, reports, summaries, descriptions, poems, letters—with a coherent structure or story line.</p> | <p><b>W4.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <ul style="list-style-type: none"> <li><b>a.</b> Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.</li> <li><b>b.</b> Use dialogue and description to develop experiences and events or show the responses of characters to situations.</li> <li><b>c.</b> Use a variety of transitional words and phrases to manage the sequence of events.</li> <li><b>d.</b> Use concrete words and phrases and sensory details to convey experiences and events precisely.</li> <li><b>e.</b> Provide a conclusion that follows from the narrated experiences or events.</li> </ul> <p><b>W4.4</b> Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p> <p><b>W4.5</b> With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 4 on pages 28 and 29.)</p> <p><b>W4.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ul style="list-style-type: none"> <li><b>a.</b> Apply grade 4 Reading standards to literature (e.g., “Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character’s thoughts, words, or actions].”).</li> <li><b>b.</b> Apply grade 4 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text”).</li> </ul> <p><b>W4.10</b> Write routinely over extended time frames (time</p> |  |

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|   | <p>for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> <p><b>RL4.2</b> Determine a theme of a story, drama, or poem from details in the text; summarize the text.</p> <p><b>RL4.3</b> Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).</p> <p><b>RL4.5</b> Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g. verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.</p> <p><b>RI4.2</b> Determine the main idea of a text and explain how it is supported by key details; summarize the text.</p> <p><b>RI4.8</b> Explain how an author uses reasons and evidence to support particular points in a text.</p> <p><b>L4.3</b> Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <ul style="list-style-type: none"> <li>a. Choose words and phrases to convey ideas precisely.*</li> <li>b. Choose punctuation for effect.*</li> <li>c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).</li> </ul> |  |
| <p>Know how to gather information from different sources (such as an encyclopedia, magazines, interviews, observations, atlas, on-line), and write short reports presenting the information in his or her own words, with attention to the following:</p> <ul style="list-style-type: none"> <li>understanding the purpose and audience of the writing</li> <li>defining a main idea and sticking to it</li> <li>providing an introduction and conclusion</li> <li>organizing material in coherent paragraphs</li> <li>documenting sources in a rudimentary bibliography</li> </ul> | <p><b>W4.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <ul style="list-style-type: none"> <li>a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</li> <li>b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</li> <li>c. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).</li> <li>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</li> <li>e. Provide a concluding statement or section related</li> </ul>   |  |

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|   | <p>to the information or explanation presented.</p> <p><b>W4.7</b> Conduct short research projects that build knowledge through investigation of different aspects of a topic.</p> <p><b>W4.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.</p> <p><b>W4.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ul style="list-style-type: none"> <li><b>a.</b> Apply grade 4 Reading standards to literature (e.g., “Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character’s thoughts, words, or actions].”).</li> <li><b>b.</b> Apply grade 4 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text”).</li> </ul> <p><b>W4.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> <p><b>RI4.9</b> Integrate information from two texts on the same topic in order to write or speak about the subject knowledgably.</p> |  |
| <p>Organize material in paragraphs and understand how to use a topic sentence</p> <p>How to develop a paragraph with examples and details that each new paragraph is indented</p> | <p><b>W4.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer’s purpose.</li> <li><b>b.</b> Provide reasons that are supported by facts and details.</li> <li><b>c.</b> Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition).</li> <li><b>d.</b> Provide a concluding statement or section related to the opinion presented.</li> </ul> <p><b>W4.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce a topic clearly and group related</li> </ul>  |  |

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|  | <p>information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</p> <ul style="list-style-type: none"> <li><b>b.</b> Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</li> <li><b>c.</b> Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).</li> <li><b>d.</b> Use precise language and domain-specific vocabulary to inform about or explain the topic.</li> <li><b>e.</b> Provide a concluding statement or section related to the information or explanation presented.</li> </ul> <p><b>W4.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <ul style="list-style-type: none"> <li><b>a.</b> Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.</li> <li><b>b.</b> Use dialogue and description to develop experiences and events or show the responses of characters to situations.</li> <li><b>c.</b> Use a variety of transitional words and phrases to manage the sequence of events.</li> <li><b>d.</b> Use concrete words and phrases and sensory details to convey experiences and events precisely.</li> <li><b>e.</b> Provide a conclusion that follows from the narrated experiences or events.</li> </ul> |  |
| <b>B. Grammar and Usage</b>  |  |  |
| <p>Understand what a complete sentence is, and identify subject and predicate in single-clause sentences</p> <p>Distinguish complete sentences from fragments</p> <p>Identify and correct run-on sentences</p> | <p><b>L4.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why).</li> <li><b>b.</b> Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses.</li> <li><b>c.</b> Use modal auxiliaries (e.g., can, may, must) to convey various conditions.</li> <li><b>d.</b> Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather</li> </ul>   |  |

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|   | <p>than a red small bag).</p> <ul style="list-style-type: none"> <li><b>e.</b> Form and use prepositional phrases.</li> <li><b>f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</li> <li><b>g.</b> Correctly use frequently confused words (e.g., to, too, two; there, their).*</li> </ul>  |  |
| <p>Identify subject and verb in a sentence and understand that they must agree.</p> | <p><b>L4.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why).</li> <li><b>b.</b> Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses.</li> <li><b>c.</b> Use modal auxiliaries (e.g., can, may, must) to convey various conditions.</li> <li><b>d.</b> Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather than a red small bag).</li> <li><b>e.</b> Form and use prepositional phrases.</li> <li><b>f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</li> <li><b>g.</b> Correctly use frequently confused words (e.g., to, too, two; there, their).*</li> </ul> |  |

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| <p>Identify and use different sentence types: declarative, interrogative, imperative, exclamatory.</p> <p>Know the following parts of speech and how they are used: nouns, pronouns, verbs (action verbs and auxiliary verbs), adjectives (including articles), adverbs, conjunctions (and, but, or), interjections.</p>   | <p><b>L4.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why).</li> <li><b>b.</b> Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses.</li> <li><b>c.</b> Use modal auxiliaries (e.g., can, may, must) to convey various conditions.</li> <li><b>d.</b> Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather than a red small bag).</li> <li><b>e.</b> Form and use prepositional phrases.</li> <li><b>f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</li> <li><b>g.</b> Correctly use frequently confused words (e.g., to, too, two; there, their).*</li> </ul> |  |
| <p>Know how to use the following punctuation: end punctuation: period, question mark, or exclamation point</p> <p>comma: between day and year when writing a date, between city and state in an address, in a series, after yes and no, before conjunctions that combine sentences, inside quotation marks in dialogue</p> <p>apostrophe: in contractions, in singular and plural possessive nouns</p> <p>quotation marks: in dialogue, for titles of poems, songs, short stories, magazine articles</p> | <p><b>L4.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use correct capitalization.</li> <li><b>b.</b> Use commas and quotation marks to mark direct speech and quotations from a text.</li> <li><b>c.</b> Use a comma before a coordinating conjunction in a compound sentence.</li> <li><b>d.</b> Spell grade-appropriate words correctly, consulting references as needed.</li> </ul>  |  |
| <p>Understand what synonyms and antonyms are, and provide synonyms or antonyms for given words.</p>  | <p><b>L4.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why).</li> <li><b>b.</b> Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses.</li> <li><b>c.</b> Use modal auxiliaries (e.g., can, may, must) to convey various conditions.</li> <li><b>d.</b> Order adjectives within sentences according to</li> </ul>   |  |

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|  | <p>conventional patterns (e.g., a small red bag rather than a red small bag).</p> <p><b>e.</b> Form and use prepositional phrases.</p> <p><b>f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</p> <p><b>g.</b> Correctly use frequently confused words (e.g., to, too, two; there, their).*</p> <p><b>L4.5</b> Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p><b>a.</b> Explain the meaning of simple similes and metaphors (e.g., as pretty as a picture) in context.</p> <p><b>b.</b> Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p><b>c.</b> Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).</p> |  |
| Use underlining or italics for titles of books.  | <p><b>L4.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p><b>a.</b> Use correct capitalization.</p> <p><b>b.</b> Use commas and quotation marks to mark direct speech and quotations from a text.</p> <p><b>c.</b> Use a comma before a coordinating conjunction in a compound sentence.</p> <p><b>d.</b> Spell grade-appropriate words correctly, consulting references as needed.</p>   |  |
| <p>Know how the following prefixes and suffixes affect word meaning:</p> <p>Prefixes:</p> <p>im, in (as in impossible, incorrect)</p> <p>non (as in nonfiction, nonviolent)</p> <p>mis (as in misbehave, misspell)</p> <p>en (as in enable, endanger)</p> <p>pre (as in prehistoric, pregame)</p> <p>Suffixes:</p> <p>ily, y (as in easily, speedily, tricky)</p> <p>ful (as in thoughtful, wonderful)</p> | <p><b>RF4.3</b> Know and apply grade-level phonics and word analysis skills in decoding words</p> <p><b>a.</b> Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p> <p><b>L4.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p><b>a.</b> Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why).</p> <p><b>b.</b> Form and use the progressive (e.g., I was walking;</p>   |  |

| Core Knowledge Sequence<br>GRADE 4  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
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| <p>able, ible (as in washable, flexible)<br/>ment (as in agreement, amazement)</p>  | <p>I am walking; I will be walking) verb tenses.</p> <ul style="list-style-type: none"> <li><b>c.</b> Use modal auxiliaries (e.g., can, may, must) to convey various conditions.</li> <li><b>d.</b> Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather than a red small bag).</li> <li><b>e.</b> Form and use prepositional phrases.</li> <li><b>f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</li> <li><b>g.</b> Correctly use frequently confused words (e.g., to, too, two; there, their).*</li> </ul> <p><b>L4.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.</li> <li><b>b.</b> Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).</li> <li><b>c.</b> Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</li> </ul> |  |
| <p>Review correct usage of problematic homophones:<br/>their, there, they're<br/>your, you're<br/>its, it's<br/>here, hear<br/>to, too, two</p> | <p><b>L4.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li><b>a.</b> Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why).</li> <li><b>b.</b> Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses.</li> <li><b>c.</b> Use modal auxiliaries (e.g., can, may, must) to convey various conditions.</li> <li><b>d.</b> Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather than a red small bag).</li> <li><b>e.</b> Form and use prepositional phrases.</li> <li><b>f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</li> </ul>   |  |



| Core Knowledge Sequence<br>GRADE 4   | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered<br>above or below CK Grade Level |
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|  | <p><b>g.</b> Correctly use frequently confused words (e.g., to, too, two; there, their).*</p>   |  |
| <b>II. Poetry</b>  |   |  |
| <b>A. Poems*</b>   |   |  |
| <p>Afternoon on a Hill (Edna St. Vincent Millay)<br/>           Clarence (Shel Silverstein)<br/>           Clouds (Christina Rossetti)<br/>           Concord Hymn (Ralph Waldo Emerson)<br/>           Dreams (Langston Hughes)<br/>           the drum (Nikki Giovanni)<br/>           Fog (Carl Sandburg)<br/>           George Washington (Rosemary and Stephen Vincent Benet)<br/>           Humanity (Elma Stuckey)<br/>           Life Doesn't Frighten Me (Maya Angelou)<br/>           Monday's Child Is Fair of Face (traditional)<br/>           Paul Revere's Ride (Henry Wadsworth Longfellow)<br/>           The Pobble Who Has No Toes (Edward Lear)<br/>           The Rhinoceros (Ogden Nash)<br/>           Things (Eloise Greenfield)<br/>           A Tragic Story (William Makepeace Thackeray)</p> | <p><b>RL4.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RF4.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p><b>b.</b> Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</p> |  |
| <b>B. Terms</b>  |   |  |
| <p>stanza and line</p>   | <p><b>RI4.4</b> Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</p>   |  |
| <b>III. Fiction</b>  |   |  |
| <b>A. Stories*</b>   |   |  |

| Core Knowledge Sequence<br>GRADE 4  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered<br>above or below CK Grade Level |
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| <p>The Fire on the Mountain (an Ethiopian folktale) from Gulliver’s Travels: Gulliver in Lilliput and Brobdingnag (Jonathan Swift)</p> <p>The Legend of Sleepy Hollow and Rip Van Winkle (Washington Irving)</p> <p>The Magic Brocade (a Chinese folktale)</p> <p>Pollyanna (Eleanor Porter)</p> <p>Robinson Crusoe (Daniel Defoe)</p> <p>Robin Hood</p> <p>St. George and the Dragon</p> <p>Treasure Island (Robert Louis Stevenson)</p> | <p><b>RL4.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RF4.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p><b>a.</b> Read on-level text with purpose and understanding</p>  |  |
| <b>B. Myths and Mythical Creatures*</b>   |  |  |
| <p>Legends of King Arthur and the Knights of the Round Table</p> <p>How Arthur Became King</p> <p>The Sword in the Stone</p> <p>The Sword Excalibur</p> <p>Guinevere</p> <p>Merlin and the Lady of the Lake</p> <p>Sir Lancelot</p>   | <p><b>RL4.4</b> Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).</p> <p><b>RL4.9</b> Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.</p> <p><b>RL4.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RF4.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p><b>a.</b> Read on-level text with purpose and understanding</p> |  |
| <b>C. Literary Terms</b>  |  |  |
| <p>novel</p> <p>plot</p> <p>setting</p>   | <p><b>RI4.4</b> Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</p>  |  |
| <b>IV. Speeches*</b>  |  |  |

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| Patrick Henry: "Give me liberty or give me death"<br>Sojourner Truth: "Ain't I a woman?"  | <p><b>RI.4.10</b> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.</p> <p><b>RF.4.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p><b>a.</b> Read on-level text with purpose and understanding</p>  |  |
| <b>V. Sayings and Phrases</b>   |  |  |
| <p>An ounce of prevention is worth a pound of cure.<br/>           As the crow flies<br/>           Beauty is only skin deep.<br/>           The bigger they are, the harder they fall.<br/>           Birds of a feather flock together.<br/>           Blow hot and cold<br/>           Break the ice<br/>           Bull in a china shop<br/>           Bury the hatchet<br/>           Can't hold a candle to<br/>           Don't count your chickens before they hatch.<br/>           Don't put all your eggs in one basket.<br/>           Etc.<br/>           Go to pot<br/>           Half a loaf is better than none.<br/>           Haste makes waste.<br/>           Laugh and the world laughs with you.<br/>           Lightning never strikes twice in the same place.<br/>           Live and let live.<br/>           Make ends meet.<br/>           Make hay while the sun shines.<br/>           Money burning a hole in your pocket<br/>           Once in a blue moon<br/>           One picture is worth a thousand words.<br/>           On the warpath</p> | <p><b>RL.4.4</b> Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).</p> <p><b>RI.4.4</b> Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</p> <p><b>L.4.5</b> Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p><b>a.</b> Explain the meaning of simple similes and metaphors (e.g., as pretty as a picture) in context.</p> <p><b>b.</b> Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p><b>c.</b> Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).</p> <p><b>L.4.6</b> Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g. quizzed, whined, stammered) and that are basic to a particular topic (e.g. wildlife, conservation, and endangered when discussing animal preservation).</p> |  |

| <b>Core Knowledge Sequence<br/>GRADE 4</b>  | <b>Common Core State Standards covered<br/>at CK Grade Level</b> | <b>Common Core State Standards covered<br/>above or below CK Grade Level</b> |
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| RSVP<br>Run-of-the-mill<br>Seeing is believing.<br>Shipshape<br>Through thick and thin<br>Timbuktu<br>Two wrongs don't make a right.<br>When it rains, it pours.<br>You can lead a horse to water, but you can't make it drink.   |  |  |
| <p><b>*Reading: Text complexity and the growth of comprehension</b></p> <p>The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.</p> <p>(Common Core State Standards for ENGLISH LANGUAGE ARTS &amp; Literacy in History/Social Studies, Science, and Technical Subjects, p. 8)</p> |  |  |

| Core Knowledge Sequence<br>GRADE 5  | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered above<br>or below CK Grade Level |
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| <b>I. Writing, Grammar, and Usage</b>   |   |  |
| <b>A. Writing and Research</b>  |   |  |
| <p>Produce a variety of types of writing—including reports, summaries, letters, descriptions, research essays, essays that explain a process, stories, poems—with a coherent structure or story line.</p> | <p><b>W5.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose.</li> <li><b>b.</b> Provide logically ordered reasons that are supported by facts and details.</li> <li><b>c.</b> Link opinion and reasons using words, phrases, and clauses (e.g., consequently, specifically).</li> <li><b>d.</b> Provide a concluding statement or section related to the opinion presented.</li> </ul> <p><b>W5.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <ul style="list-style-type: none"> <li><b>a.</b> Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</li> <li><b>b.</b> Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</li> <li><b>c.</b> Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially).</li> <li><b>d.</b> Use precise language and domain-specific vocabulary to inform about or explain the topic.</li> <li><b>e.</b> Provide a concluding statement or section related to the information or explanation presented.</li> </ul> <p><b>W5.3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <ul style="list-style-type: none"> <li><b>a.</b> Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.</li> <li><b>b.</b> Use narrative techniques, such as dialogue,</li> </ul> |  |

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|                                    | <p>description, and pacing, to develop experiences and events or show the responses of characters to situations.</p> <ul style="list-style-type: none"> <li>c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events.</li> <li>d. Use concrete words and phrases and sensory details to convey experiences and events precisely.</li> <li>e. Provide a conclusion that follows from the narrated experiences or events.</li> </ul> <p><b>W5.4</b> Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p> <p><b>W5.5</b> With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 5 on pages 28 and 29.)</p> <p><b>W5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ul style="list-style-type: none"> <li>a. Apply grade 5 Reading standards to literature (e.g., “Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]”).</li> <li>b. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</li> </ul> <p><b>W5.10</b> Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> <p><b>RL5.3</b> Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).</p> <p><b>RI5.8</b> Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).</p> <p><b>L5.3</b> Use knowledge of language and its conventions</p> |  |

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|   | <p>when writing, speaking, reading, or listening.</p> <ul style="list-style-type: none"> <li>a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.</li> <li>b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.</li> </ul>  |  |
| <p>Know how to gather information from different sources (such as an encyclopedia, magazines, interviews, observations, atlas, on-line), and write short reports synthesizing information from at least three different sources, presenting the information in his or her own words, with attention to the following:</p> <ul style="list-style-type: none"> <li>understanding the purpose and audience of the writing</li> <li>defining a main idea and sticking to it</li> <li>providing an introduction and conclusion</li> <li>organizing material in coherent paragraphs</li> <li>illustrating points with relevant examples</li> <li>documenting sources in a rudimentary bibliography</li> </ul> | <p><b>W5.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <ul style="list-style-type: none"> <li>a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</li> <li>b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</li> <li>c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially).</li> <li>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</li> <li>e. Provide a concluding statement or section related to the information or explanation presented.</li> </ul> <p><b>W5.7</b> Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.</p> <p><b>W5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</p> <p><b>W5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ul style="list-style-type: none"> <li>a. Apply grade 5 Reading standards to literature (e.g., “Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]”).</li> <li>b. Apply grade 5 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support</li> </ul> |  |

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|   | <p>which point[s]").</p> <p><b>RI5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</p> <p><b>RI5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.</p>   |  |
| <b>B. Grammar and Usage</b>   |  |  |
| Understand what a complete sentence is, and identify subject and predicate correct fragments and run-ons  |  |  |
| Identify subject and verb in a sentence and understand that they must agree.  |  |  |
| Know the following parts of speech and how they are used: nouns, verbs (action verbs and auxiliary verbs), adjectives (including articles), adverbs, conjunctions, interjections. | <p><b>L5.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> <li>a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences.</li> <li>b. Form and use the perfect (e.g., I had walked; I have walked; I will have walked) verb tenses.</li> <li>c. Use verb tense to convey various times, sequences, states, and conditions.</li> <li>d. Recognize and correct inappropriate shifts in verb tense.*</li> <li>e. Use correlative conjunctions (e.g., either/or, neither/nor).</li> </ul> |  |
| Understand that pronouns must agree with their antecedents in case (nominative, objective, possessive), number, and gender.   |  |  |
| Correctly use punctuation studied in earlier grades, as well as the colon before a list, commas with an appositive  | <p><b>L5.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ul style="list-style-type: none"> <li>a. Use punctuation to separate items in a series.*</li> <li>b. Use a comma to separate an introductory</li> </ul>   |  |



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|  | <p>element from the rest of the sentence.</p> <ul style="list-style-type: none"> <li>c. Use a comma to set off the words <i>yes</i> and <i>no</i> (e.g., <i>Yes, thank you</i>), to set off a tag question from the rest of the sentence (e.g., <i>It's true, isn't it?</i>), and to indicate direct address (e.g., <i>Is that you, Steve?</i>).</li> <li>d. Use underlining, quotation marks, or italics to indicate titles of works.</li> <li>e. Spell grade-appropriate words correctly, consulting references as needed.</li> </ul>  |  |
| <p>Use underlining or italics for titles of books.</p>   | <p><b>L5.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ul style="list-style-type: none"> <li>a. Use punctuation to separate items in a series.*</li> <li>b. Use a comma to separate an introductory element from the rest of the sentence.</li> <li>c. Use a comma to set off the words <i>yes</i> and <i>no</i> (e.g., <i>Yes, thank you</i>), to set off a tag question from the rest of the sentence (e.g., <i>It's true, isn't it?</i>), and to indicate direct address (e.g., <i>Is that you, Steve?</i>).</li> <li>d. Use underlining, quotation marks, or italics to indicate titles of works.</li> <li>e. Spell grade-appropriate words correctly, consulting references as needed.</li> </ul> |  |
| <b>C. Vocabulary</b>   |  |  |
| <p>Know how the following prefixes and suffixes affect word meaning:</p> <p>Prefixes:</p> <p>anti (as in antisocial, antibacterial) inter (as in interstate)</p> <p>co (as in coeducation, co-captain)</p> <p>mid (as in midnight, Midwest)</p> <p>fore (as in forefather, foresee) post (as in postseason, postwar)</p> <p>il, ir (as in illegal, irregular) semi (as in semicircle, semiprecious)</p> <p>Suffixes:</p> | <p><b>RF5.3</b> Know and apply grade-level phonics and word analysis skills in decoding words</p> <ul style="list-style-type: none"> <li>a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</li> </ul> <p><b>L5.4</b> Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.</p> <ul style="list-style-type: none"> <li>a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.</li> </ul>   |  |

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| ist (as in artist, pianist)<br>ish (as in stylish, foolish)<br>ness (as in forgiveness, happiness)<br>tion, sion (as in relation, extension)  | <ul style="list-style-type: none"> <li><b>b.</b> Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis).</li> <li><b>c.</b> Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</li> </ul>  |  |
| <b>II. Poetry</b>   |   |  |
| <b>A. Poems*</b>  |   |  |
| The Arrow And The Song (Henry Wadsworth Longfellow)<br>Barbara Frietchie (John Greenleaf Whittier)<br>Battle Hymn of the Republic (Julia Ward Howe)<br>A bird came down the walk (Emily Dickinson)<br>Casey at the Bat (Ernest Lawrence Thayer)<br>The Eagle (Alfred Lord Tennyson)<br>I Hear America Singing (Walt Whitman)<br>I like to see it lap the miles (Emily Dickinson)<br>I, too, sing America (Langston Hughes)<br>Jabberwocky (Lewis Carroll)<br>Narcissa (Gwendolyn Brooks)<br>O Captain! My Captain! (Walt Whitman)<br>A Poison Tree (William Blake)<br>The Road Not Taken (Robert Frost)<br>The Snowstorm (Ralph Waldo Emerson)<br>Some Opposites (Richard Wilbur)<br>The Tiger (William Blake)<br>A Wise Old Owl (Edward Hersey Richards) | <p><b>RL5.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.</p> <p><b>RF5.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <ul style="list-style-type: none"> <li><b>b.</b> Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</li> </ul> <p>*Specifically listed in CCSS</p> |  |
| <b>B. Terms</b>   |   |  |

| Core Knowledge Sequence<br>GRADE 5  | Common Core State Standards covered<br>at CK Grade Level   | Common Core State Standards covered above<br>or below CK Grade Level |
|---|--|--|
| onomatopoeia<br>alliteration  | <b>RI5.4</b> Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.  |  |
| <b>III. Fiction and Drama</b>   |  |  |
| <b>A. Stories*</b>  |  |  |
| <p>The Adventures of Tom Sawyer (Mark Twain)</p> <p>episodes from Don Quixote (Miguel de Cervantes)</p> <p>Little Women (Part First) (Louisa May Alcott)</p> <p>Narrative of the Life of Frederick Douglass (Frederick Douglass)</p> <p>The Secret Garden (Frances Hodgson Burnett)</p> <p>Tales of Sherlock Holmes, including “The Red-Headed League” (Arthur Conan Doyle)</p> | <p><b>RL5.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.</p> <p><b>RF5.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p><b>a.</b> Read on-level text with purpose and understanding</p> |  |
| <b>B. Drama*</b>  |  |  |
| <p>A Midsummer Night’s Dream (William Shakespeare)</p>  | <p><b>RL5.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.</p> <p><b>RF5.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p><b>a.</b> Read on-level text with purpose and understanding</p> |  |
| <p>Terms:<br/>tragedy and comedy<br/>act, scene<br/>Globe Theater</p>   | <p><b>RL5.5</b> Explain how a series of chapters, scenes, or stanzas fit together to provide the overall structure of a particular story, drama, or poem.</p> <p><b>RI5.4</b> Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.</p>   |  |
| <b>C. Myths and Legends*</b>  |  |  |

| Core Knowledge Sequence<br>GRADE 5   | Common Core State Standards covered<br>at CK Grade Level  | Common Core State Standards covered above<br>or below CK Grade Level |
|--|---|--|
| <p>A Tale of the Oki Islands (a legend from Japan, also known as “The Samurai’s Daughter”)</p> <p>Morning Star and Scarface: the Sun Dance (a Plains Native American legend, also known as “The Legend of Scarface”)</p> <p>Native American trickster stories (for example, tales of Coyote, Raven, or Grandmother Spider)</p> | <p><b>RL5.10</b> By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.</p> <p><b>RF5.4</b> Read with sufficient accuracy and fluency to support comprehension</p> <p style="padding-left: 20px;"><b>a.</b> Read on-level text with purpose and understanding</p>  |  |
| <b>D. Literary Terms</b>   |   |  |
| Pen name (pseudonym)   |   |  |
| <p>Literal and figurative language<br/>imagery<br/>metaphor and simile<br/>symbol<br/>personification</p>  | <p><b>RL5.4</b> Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.</p> <p><b>RL5.7</b> Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).</p>  |  |
| <b>IV. Speeches*</b>   |   |  |
| <p>Abraham Lincoln: The Gettysburg Address</p> <p>Chief Joseph (Highh’moot Tooyalakekt): “I will fight no more forever”</p>  | <p><b>RI5.10</b> By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.</p>  |  |
| <b>V. Sayings and Phrases</b>  |   |  |
| <p>Birthday suit</p> <p>Bite the hand that feeds you.</p> <p>Chip on your shoulder</p> <p>Count your blessings.</p> <p>Eat crow</p> <p>Eleventh hour</p> <p>Eureka!</p> <p>Every cloud has a silver lining.</p> <p>Few and far between</p> <p>Forty winks</p> <p>The grass is always greener on the other</p>                  | <p><b>RI5.4</b> Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.</p> <p><b>L5.5</b> Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p style="padding-left: 20px;"><b>a.</b> Interpret figurative language, including similes and metaphors, in context.</p> <p style="padding-left: 20px;"><b>b.</b> Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p style="padding-left: 20px;"><b>c.</b> Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.</p> <p><b>L5.6</b> Acquire and use accurately grade-appropriate</p> |  |

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|---|---|--|
| <p>side (of the hill).<br/>           To kill two birds with one stone<br/>           Lock, stock and barrel<br/>           Make a mountain out of a molehill<br/>           A miss is as good as a mile.<br/>           It's never too late to mend.<br/>           Out of the frying pan and into the fire.<br/>           A penny saved is a penny earned.<br/>           Read between the lines.<br/>           Sit on the fence<br/>           Steal his/her thunder<br/>           Take the bull by the horns.<br/>           Till the cows come home<br/>           Time heals all wounds.<br/>           Tom, Dick and Harry<br/>           Vice versa<br/>           A watched pot never boils.<br/>           Well begun is half done.<br/>           What will be will be</p>  | <p>general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).</p> |  |
| <p><b>*Reading: Text complexity and the growth of comprehension</b><br/>           The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.<br/>           (Common Core State Standards for ENGLISH LANGUAGE ARTS &amp; Literacy in History/Social Studies, Science, and Technical Subjects, p. 8)</p> |   |  |

| Core Knowledge Sequence<br>GRADE 6  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level  |
|---|--|---|
| <b>I. Writing Grammar and Usage</b>   |  |   |
| <b>A. Writing and Research</b>  |  |   |
| Learn strategies and conventions for writing a persuasive essay, with attention to defining a thesis (that is, a central proposition, a main idea) supporting the thesis with evidence, examples, and reasoning distinguishing evidence from opinion anticipating and answering counter-arguments maintaining a reasonable tone   |  |   |
| Write a research essay, with attention to asking open-ended questions<br>gathering relevant data through library and field research summarizing, paraphrasing, and quoting accurately when taking notes defining a thesis<br>organizing with an outline<br>integrating quotations from sources<br>acknowledging sources and avoiding plagiarism<br>preparing a bibliography |  |   |
| Write a standard business letter.   |  |   |
| <b>B. Speaking and Listening</b>  |  |   |
| Participate civilly and productively in group discussions.  |  | <p><b>SL.4.1</b> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on <i>grade 4 topics and texts</i>, building on others' ideas and expressing their own clearly.</p> <ul style="list-style-type: none"> <li><b>a.</b> Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</li> <li><b>b.</b> Follow agreed-upon rules for discussions and carry out assigned roles.</li> <li><b>c.</b> Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and</li> </ul> |

| Core Knowledge Sequence<br>GRADE 6  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level  |
|---|--|---|
|   |  | <p>link to the remarks of others.</p> <p><b>d.</b> Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.</p> <p><b>SL5.1</b> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.</p> <p><b>a.</b> Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p><b>b.</b> Follow agreed-upon rules for discussions and carry out assigned roles.</p> <p><b>c.</b> Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.</p> <p><b>d.</b> Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.</p> |
| <p>Give a short speech to the class that is well-organized and well-supported.</p>  |  | <p><b>SL4.4</b> Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</p> <p><b>SL5.4</b> Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</p>   |
| <p>Demonstrate an ability to use standard pronunciation when speaking to large groups and in formal circumstances, such as a job interview.</p> |  | <p><b>SL4.6</b> Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See grade 4 Language standards 1 on pages 28 and 29 for specific expectations.)</p> <p><b>SL5.6</b> Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See grade 5 Language standards 1 and 3 on pages 28 and 29 for specific expectations.)</p>  |

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|---|--|--|
| <b>C. Grammar and Usage</b>   |  |  |
| Understand what a complete sentence is, and identify subject and predicate, identify independent and dependent clauses, correct fragments and run-ons   |  |  |
| Identify different sentence types, and write for variety by using<br>simple sentences<br>compound sentences<br>complex sentences<br>compound-complex sentences  |  |  |
| Correctly use punctuation introduced in earlier grades, and learn how to use a semicolon or comma with <i>and</i> , <i>but</i> , or <i>or</i> to separate the sentences that form a compound sentence.    |  |  |
| Correctly use punctuation introduced in earlier grades, and learn how to use a semicolon or comma with <i>and</i> , <i>but</i> , or <i>or</i> to separate the sentences that form a compound sentence.    |  |  |
| Recognize the following troublesome verbs and how to use them correctly:<br>sit, set<br>rise, raise<br>lie, lay   |  |  |
| Correctly use the following:<br>good / well<br>between / among<br>bring / take<br>accept / except<br>fewer / less<br>like / as<br>affect / effect<br>who / whom<br>imply / infer<br>principle / principal |  |  |



| Core Knowledge Sequence<br>GRADE 6  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| their / there / they're   |  |  |
| <b>D. Spelling</b>  |  |  |
| Review spelling rules for use of <i>ie</i> and <i>ei</i> ; for adding prefixes and suffixes   |  |  |
| Continue work with spelling, with special attention to commonly misspelled words, including:<br>acquaintance<br>amateur<br>analyze<br>answer<br>athlete<br>Britain<br>characteristic<br>committee<br>conscious<br>cooperate<br>criticize<br>dependent<br>develop<br>embarrassed<br>exaggerate<br>exercise<br>fulfill<br>gymnasium<br>hypocrite<br>innocence<br>interrupt<br>license<br>marriage<br>minimum<br>naturally<br>occurrence<br>parallel |  |  |

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|---|--|--|
| peasant<br>philosopher<br>possess<br>privilege<br>receipt<br>recommendation<br>repetition<br>restaurant<br>rhythm<br>separate<br>similar<br>sophomore<br>substitute<br>success<br>suspicion<br>tragedy<br>woman<br>writing  |  |  |
| <b>E. Vocabulary</b>  |  |  |
| <i>Latin/Greek Word Meaning Examples</i><br>annus [L] year annual, anniversary<br>ante [L] before antebellum,<br>antecedent<br>aqua [L] water aquarium<br>astron [G] star astronaut,<br>astronomy<br>bi [L] two bisect, bipartisan<br>bios [G] life biology, biography<br>centum [L] hundred cent, percent<br>decem [L] ten decade, decimal<br>dico, dictum [L] say, thing said<br>dictation, dictionary<br>duo [G, L] two duplicate<br>ge [G] earth geology, geography |  |  |

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|---|--|--|
| <p>           hydor [G] water hydrant, hydroelectric<br/>           magnus [L] large, great magnificent, magnify<br/>           mega [G] large, great megaphone, megalomania<br/>           mikros [G] small microscope, microfilm<br/>           minus [L] smaller diminish, minor<br/>           monos [G] single monologue, monarch,<br/>           monopoly<br/>           omnis [L] all omnipotent, omniscient<br/>           phileo [G] to love philosophy, philanthropist<br/>           phone [G] sound, voice phonograph, telephone<br/>           photo [from G <i>phos</i>/light photograph, photocopy<br/>           poly [G] many polygon<br/>           post [L] after posthumous, posterity<br/>           pre [L] before predict, prepare<br/>           primus [L] first primary, primitive<br/>           protos [G] first prototype, protozoa<br/>           psyche[G] soul, mind psychology<br/>           quartus [L] fourth quadrant, quarter<br/>           tele [G] at a distance telephone, television,<br/>           telepathy<br/>           thermos [G] heat thermometer, thermostat<br/>           tri [G, L] three trilogy, triangle<br/>           unus [L] one unanimous, unilateral<br/>           video, visum [L] see, seen evident, visual<br/>           vita [L] life vitality, vitamin         </p> |  |  |
| <b>II. Poetry</b>   |  |  |
| <b>A. Poems</b>   |  |  |

| Core Knowledge Sequence<br>GRADE 6   | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
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| <p>All the world's a stage [from <i>As You Like It</i>]<br/>(William Shakespeare)</p> <p>Apostrophe to the Ocean [from <i>Childe Harold's Pilgrimage</i>, Canto 4,<br/>Nos. 178-184] (George Gordon Byron)</p> <p>I Wandered Lonely as a Cloud (William Wordsworth)</p> <p>If (Rudyard Kipling)</p> <p>Mother to Son (Langston Hughes)</p> <p>Lift Ev'ry Voice and Sing (James Weldon Johnson)</p> <p>A narrow fellow in the grass (Emily Dickinson)</p> <p>A Psalm of Life (Henry Wadsworth Longfellow)</p> <p>The Raven (Edgar Allan Poe)</p> <p>A Song of Greatness (a Chippewa song, trans. Mary Austin)</p> <p>Stopping by Woods on a Snowy Evening (Robert Frost)</p> <p>Sympathy (Paul Laurence Dunbar)</p> <p>There is no frigate like a book (Emily Dickinson)</p> <p>The Walloping Window-blind (Charles E. Carryl)</p> <p>Woman Work (Maya Angelou)</p> |  |  |
| <b>B. Terms</b>  |  |  |
| meter  |  |  |
| iamb   |  |  |
| couplet  |  |  |
| rhyme scheme   |  |  |
| free verse   |  |  |
| <b>III. Fiction and Drama</b>  |  |  |
| <b>A. Stories</b>  |  |  |
| <p><i>The Iliad</i> and <i>The Odyssey</i> (Homer)</p> <p><i>The Prince and the Pauper</i> (Mark Twain)</p>  |  |  |
| <b>B. Drama</b>  |  |  |

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|---|--|--|
| <i>Julius Caesar</i> (William Shakespeare)  |  |  |
| <b>C. Classical Mythology</b>   |  |  |
| Apollo and Daphne<br>Orpheus and Eurydice<br>Narcissus and Echo<br>Pygmalion and Galatea                                |  |  |
| <b>D. Literary Terms</b>  |  |  |
| Epic  |  |  |
| Literal and figurative language (review from<br>grade 5)<br>imagery<br>metaphor and simile<br>symbol<br>personification |  |  |
| <b>IV. Sayings and Phrases</b>  |  |  |

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|---|--|--|
| <p>All for one and one for all.<br/> All's well that ends well.<br/> Bee in your bonnet<br/> The best-laid plans of mice and men oft go awry.<br/> A bird in the hand is worth two in the bush.<br/> Bite the dust<br/> Catch-as-catch-can<br/> Don't cut off your nose to spite your face.<br/> Don't lock the stable door after the horse is stolen.<br/> Don't look a gift horse in the mouth.<br/> Eat humble pie<br/> A fool and his money are soon parted.<br/> A friend in need is a friend indeed.<br/> Give the devil his due.<br/> Good fences make good neighbors.<br/> He who hesitates is lost.<br/> He who laughs last laughs best.<br/> Hitch your wagon to a star.<br/> If wishes were horses, beggars would ride.<br/> The leopard doesn't change his spots.<br/> Little strokes fell great oaks.<br/> Money is the root of all evil.<br/> Necessity is the mother of invention.<br/> It's never over till it's over.<br/> Nose out of joint<br/> Nothing will come of nothing.<br/> Once bitten, twice shy.<br/> On tenterhooks<br/> Pot calling the kettle black<br/> Procrastination is the thief of time.<br/> The proof of the pudding is in the eating.<br/> RIP<br/> The road to hell is paved with good intentions.<br/> The road to hell is paved with good intentions.<br/> Rome wasn't built in a day.<br/> Rule of thumb<br/> A stitch in time saves nine.<br/> Strike while the iron is hot.<br/> Tempest in a teapot<br/> Tenderfoot</p> | (DRAFT)  |  |



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|--|--|--|
| <b>I. Writing, Grammar, and Usage</b>  |  |  |
| <b>A. Writing and Research</b>   |  |  |
| Expository writing: Write nonfiction essays that describe, narrate, persuade, and compare and contrast.  |  |  |
| Write research essays, with attention to asking open-ended questions<br>gathering relevant data through library and field research<br>summarizing, paraphrasing, and quoting accurately when taking notes<br>defining a thesis (that is, a central proposition, a main idea)<br>organizing with an outline<br>integrating quotations from sources<br>acknowledging sources and avoiding plagiarism<br>preparing a bibliography |  |  |
| <b>B. Speaking and Listening</b>   |  |  |
| Participate civilly and productively in group discussions.   |  |  |
| Give a short speech to the class that is well-organized and well-supported.  |  |  |
| Demonstrate an ability to use standard pronunciation when speaking to large groups and in formal circumstances, such as a job interview.   |  |  |
| <b>C. Grammar</b>  |  |  |
| Parts of the Sentence  |  |  |
| Prepositional phrases<br>Identify as adjectival or adverbial<br>Identify word(s) modified by the prepositional phrase<br>Object of preposition (note that pronouns are in objective case)  |  |  |



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|---|--|--|
| Punctuation of prepositional phrases  |  |  |
| Subject and verb<br>Find complete subject and complete predicate<br>Identify simple subject and simple verb (after eliminating prepositional phrases):<br>in statements<br>in questions<br>in commands (you understood)<br>with there and here<br>Auxiliary verbs<br>Noun of direct address<br>Subject-verb agreement:<br>with compound subjects<br>with compound subjects joined by <i>or</i><br>with indefinite pronouns (for example, everyone, anyone, some, all) |  |  |
| Complements<br>Find direct and indirect objects<br>Review linking vs. action verbs<br>Predicate nominative<br>Predicate adjective   |  |  |
| Appositives<br>Identify and tell which noun is renamed<br>Use of commas with appositive phrases   |  |  |
| Participles<br>Identify past, present participles<br>Identify participial phrases<br>Find the noun modified<br>Commas with participial phrases  |  |  |
| Gerunds and gerund phrases<br>Identify and tell its use in the sentence (subject, direct object, indirect object, appositive, predicate nominative, object of preposition)  |  |  |

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|--|--|--|
| Infinitives and infinitive phrases<br>Adjective and adverb: find the word it modifies<br>Noun: tell its use in the sentence  |  |  |
| Clauses  |  |  |
| Review: sentences classified by structure<br>Simple; compound (coordinating conjunctions v.<br>conjunctive adverbs);<br>complex; compound-complex  |  |  |
| Review independent (main) v. dependent<br>(subordinate) clauses  |  |  |
| Kinds of dependent clauses<br>Adjective clauses<br>Identify and tell noun modified<br>Introductory words: relative pronouns, relative<br>adverbs (where, when)<br>Implied “that”<br>Commas with nonrestrictive (nonessential)<br>adjective clause<br>Adverb clauses<br>Identify and tell the word(s) modified<br>Subordinating conjunctions (for example,<br>because, although, when, since, before,<br>after, as soon as, where)<br>Comma after introductory adverbial clause<br>Noun clauses<br>Identify and tell use in the sentence (subject,<br>predicate nominative, direct object,<br>indirect object, object of preposition, appositive,<br>objective complement, noun<br>of direct address) |  |  |
| <b>D. Spelling</b>   |  |  |
| Continue work with spelling, with special<br>attention to commonly misspelled<br>words, including:<br>achievement  |  |  |

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|---|--|--|
| address<br>analysis<br>anonymous<br>argument<br>beginning<br>business<br>college<br>conscience<br>control<br>criticism<br>despise<br>definite<br>description<br>doesn't<br>environment<br>excellent<br>existence<br>grammar<br>hypocrisy<br>immediately<br>interpret<br>knowledge<br>lieutenant<br>medieval<br>muscle<br>muscular<br>occasionally<br>offense<br>particularly<br>persuade<br>politician<br>prejudice<br>probably<br>recognize<br>remembrance |  |  |

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|---|--|--|
| responsibility<br>rhyme<br>sacrifice<br>scholar<br>shepherd<br>sincerely<br>sponsor<br>succeed<br>surprise<br>tendency<br>thorough<br>truly<br>women<br>written   |  |  |
| <b>E. Vocabulary</b>  |  |  |
| <i>Latin/Greek Word Meaning Examples</i><br>ab [L] away from abnormal, absent<br>ad [L] to, forward advocate, advance<br>amo [L] love amiable, amorous<br>audio [L] hear audience, inaudible<br>auto [G] self automobile, autocrat<br>bene [L] good/well beneficial, benefit<br>circum [L] around circulate, circumference<br>celer [L] swift accelerate<br>chronos [G] time chronological<br>cresco [L] grow increase, decrease<br>cum [L] with compose, accommodate<br>curro [L] run current, cursive, course<br>demos [G] people democracy, epidemic<br>erro [L] wander, stray error, erratic<br>ex [L] from, out of exclaim, exhaust<br>extra [L] outside extravagant, extraordinary<br>facio [L] make effect, affect |  |  |

| Core Knowledge Sequence<br>GRADE 7  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| fero [L] bring, bear confer, defer<br>fragilis [L] breakable fragile, fragment<br>finis [L] end confine, finality<br>homos [G] same homogenous<br>hyper [G] over, beyond hypertension, hyperactive<br>hypo [G] under, beneath hypodermic, hypothesis<br>jacio [L] throw eject, interject<br>judex [L] a judge judge, prejudice<br>juro [L] swear jury, perjury<br>makros [G] long macrocosm<br>malus [L] bad malady, malice<br>manus [L] hand manufacture, manuscript<br>morphe [G] form metamorphosis, amorphous<br>neos [G] new neophyte<br>pan [G] all panorama, panacea<br>pedis [L] foot pedal, biped<br>polis [G] city metropolis<br>pro [L] before, for proceed, propose, prodigy<br>pseudos [G] a lie pseudonym<br>re [L] back, again react, reply, revise<br>scribo[L] write scribble, inscribe<br>sentio [L] feel (with senses) sensation, sensual,<br>sentry<br>sequor [L] follow subsequent, sequel<br>solvo [L] loosen solution, dissolve, solvent<br>specto [L] look at inspect, speculate, perspective<br>strictus [L] drawn tight strict, constricted<br>sub [L] under subdue, subject, subtract<br>super [L] above superficial, superlative, supreme<br>syn [G] together synchronize, synthesis<br>tendo [L] stretch tension, intense, detention<br>teneo [L] hold, keep contain, content, maintain<br>trans [L] across transfer, transcontinental<br>valeo [L] be strong prevail, valiant<br>venio [L] come event, advent |  |  |

| Core Knowledge Sequence<br>GRADE 7  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level   |
|---|--|--|
| voco [L] call vocal, voice, vociferous<br>volvo [L] revolve evolve, revolution<br>zoon, zoe [G] animal, life zoology, protozoa  |  |  |
| <b>II. Poetry</b>   |  |  |
| <b>A. Poems</b>   |  |  |
| Annabel Lee (Edgar Allan Poe)<br>Because I could not stop for Death (Emily Dickinson)<br>The Charge of the Light Brigade (Alfred Lord Tennyson)<br>The Chimney Sweeper (both versions from <i>The Songs of Innocence</i> and <i>The Songs of Experience</i> ; William Blake)<br>The Cremation of Sam McGee (Robert Service)<br>Dulce et Decorum Est (Wilfred Owen)<br>Fire and Ice; Nothing Gold Can Stay (Robert Frost)<br>Heritage (Countee Cullen)<br>Macavity: The Mystery Cat (T.S. Eliot)<br>The Negro Speaks of Rivers; Harlem; Life is Fine (Langston Hughes)<br>This Is Just to Say; The Red Wheelbarrow (William Carlos Williams) |  |  |
| <b>B. Elements of Poetry</b>  |  |  |
| Review: meter, iamb, rhyme scheme, free verse, couplet, onomatopoeia, alliteration  |  |  |
| Stanzas and refrains  |  | <b>RL5.5</b> Explain how a series of chapters, scenes, or stanzas fit together to provide the overall structure of a particular story, drama, or poem. |
| Forms<br>ballad<br>sonnet<br>lyric<br>narrative<br>limerick   |  |  |

| Core Knowledge Sequence<br>GRADE 7   | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level  |
|--|--|---|
| haiku  |  |   |
| Types of rhyme: end, internal, slant, eye  |  |   |
| <b>III. Fiction and Drama</b>  |  |   |
| <b>A. Short Stories</b>  |  |   |
| “The Gift of the Magi” (O. Henry)<br>“The Necklace” (Guy de Maupassant)<br>“The Secret Life of Walter Mitty” (James Thurber)<br>“The Tell-Tale Heart”; “The Purloined Letter”<br>(Edgar Allan Poe) |  |   |
| <b>B. Novels/Novellas</b>  |  |   |
| <i>The Call of the Wild</i> (Jack London)<br><i>Dr. Jekyll and Mr. Hyde</i> (Robert Louis Stevenson)   |  |   |
| <b>C. Elements of Fiction</b>  |  |   |
| Review aspects of plot and setting   |  |   |
| Theme  |  |   |
| Point of view in narration<br>omniscient narrator<br>unreliable narrator<br>third person limited<br>first person   |  | <b>RL4.6</b> Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.<br><b>RI4.6</b> Compare and contrast a firsthand and second hand account of the same event or topic; describe the differences in focus and the information provided.<br><b>RL5.6</b> Describe how a narrator’s or speaker’s point of view influences how events are described.<br><b>RI5.6</b> Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent. |
| Conflict: external and internal  |  |   |
| Suspense and climax  |  |   |
| <b>D. Essays and Speeches</b>  |  |   |

| Core Knowledge Sequence<br>GRADE 7  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| "Shooting an Elephant" (George Orwell)<br>"The Night the Bed Fell" (James Thurber)<br>"Declaration of War on Japan" (Franklin D. Roosevelt) |  |  |
| <b>E. Autobiography</b>   |  |  |
| <i>Diary of a Young Girl</i> (Anne Frank)   |  |  |
| <b>F. Drama</b>   |  |  |
| <i>Cyrano de Bergerac</i> (Edmond Rostand)  |  |  |
| Elements of drama<br>Tragedy and comedy (review)<br>Aspects of conflict, suspense, and<br>characterization<br>Soliloquies and asides        |  |  |
| <b>G. Literary Terms</b>  |  |  |
| Irony: verbal, situational, dramatic  |  |  |
| Flashbacks and foreshadowing  |  |  |
| Hyperbole; oxymoron; parody   |  |  |
| <b>IV. Foreign Phrases Commonly Used in English</b>   |  |  |



| Core Knowledge Sequence<br>GRADE 7   | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|--|--|--|
| <p>ad hoc - concerned with a particular purpose; improvised [literally, "to the thing"]</p> <p>bona fides - good faith; sincere, involving no deceit or fraud</p> <p>carpe diem - seize the day, enjoy the present</p> <p>caveat emptor - let the buyer beware, buy at your own risk</p> <p>de facto - in reality, actually existing</p> <p>in extremis - in extreme circumstances, especially at the point of death</p> <p>in medias res - in the midst of things</p> <p>in toto - altogether, entirely</p> <p>modus operandi - a method of procedure</p> <p>modus vivendi - a way of living, getting along</p> <p>persona non grata - an unacceptable or unwelcome person</p> <p>prima facie - at first view, apparently; self-evident</p> <p>pro bono publico - for the public good</p> <p>pro forma - for the sake of form, carried out as a matter of formality</p> <p>quid pro quo - something given or received in exchange for something else</p> <p>requiescat in pace, R I P - may he or she rest in peace [seen on tombstones]</p> <p>sic transit gloria mundi - thus passes away the glory of the world</p> <p>sine qua non - something absolutely indispensable [literally, "without which not"]</p> <p>sub rosa – secretly</p> |  |  |

| Core Knowledge Sequence<br>Grade 8   | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|--|--|--|
| <b>I. Writing, Grammar, and Usage</b>  |  |  |
| <b>A. Writing and Research</b>   |  |  |
| Expository writing: Write essays that describe, narrate, persuade, and compare and contrast.   |  |  |
| Write research essays, with attention to <ul style="list-style-type: none"> <li>asking open-ended questions</li> <li>gathering relevant data through library and field research</li> <li>summarizing, paraphrasing, and quoting accurately when taking notes</li> <li>defining a thesis (that is, a central proposition, a main idea)</li> <li>organizing with an outline</li> <li>integrating quotations from sources</li> <li>acknowledging sources and avoiding plagiarism</li> <li>preparing a bibliography</li> </ul> |  |  |
| <b>B. Speaking and Listening</b>   |  |  |
| Participate civilly and productively in group discussions.   |  |  |
| Give a short speech to the class that is well-organized and well-supported.  |  |  |
| Demonstrate an ability to use standard pronunciation when speaking to large groups and in formal circumstances, such as a job interview.   |  |  |
| <b>C. Grammar</b>  |  |  |
| Punctuation  |  |  |
| Review punctuation based on sentence structure, including <ul style="list-style-type: none"> <li>semi-colons</li> <li>commas with phrases and clauses</li> </ul>   |  |  |
| Review other punctuation, including punctuation of quotations, dialogue  |  |  |

| Core Knowledge Sequence<br>Grade 8   | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|--|--|--|
| use of parentheses<br>hyphens<br>dashes<br>colons<br>italics<br>apostrophes  |  |  |
| Misplace Modifiers   |  |  |
| Phrases and clauses go as near as possible to the<br>word(s) they modify.<br>Dangling modifiers<br>Two-way modifiers   |  |  |
| Parallelism  |  |  |
| Parallelism is expressing ideas of equal<br>importance using the same grammatical<br>constructions.  |  |  |
| Kinds of parallelism<br>coordinate (using coordinating conjunctions <i>and</i> ,<br><i>but</i> , <i>or</i> , <i>nor</i> , <i>yet</i> )<br>compared/contrasted<br>correlative (both . . . and, either . . . or, neither . . .<br>nor, not only . . . but also)        |  |  |
| Correcting faulty parallelism<br>repeating words (articles, prepositions,<br>pronouns) to maintain parallelism<br>completing parallel construction<br>revising sentences using parallel structure (for<br>example, using all gerund<br>phrases, or all noun clauses) |  |  |
| Sentence Variety   |  |  |
| Review sentences classified by structure: simple,<br>compound, complex,<br>compound-complex.   |  |  |
| Varying sentence length and structure to avoid<br>monotony   |  |  |

| Core Knowledge Sequence<br>Grade 8   | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|--|--|--|
| Varying sentence openings  |  |  |
| <b>D. Spelling</b>   |  |  |
| <p>Continue work with spelling, with special attention to commonly misspelled words, including:</p> <ul style="list-style-type: none"> <li>absence</li> <li>accommodate</li> <li>analysis</li> <li>attendance</li> <li>believe</li> <li>bureau</li> <li>capitol</li> <li>colonel</li> <li>committee</li> <li>correspondence</li> <li>curiosity</li> <li>defendant</li> <li>dessert</li> <li>desperate</li> <li>dissatisfied</li> <li>extraordinary</li> <li>fascinating</li> <li>foreign</li> <li>guarantee</li> <li>hygiene</li> <li>independence</li> <li>laboratory</li> <li>library</li> <li>lightning</li> <li>maintenance</li> <li>mileage</li> <li>necessary</li> <li>occurrence</li> <li>permanence</li> </ul> |  |  |

| Core Knowledge Sequence<br>Grade 8  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| physician<br>prairie<br>sergeant<br>souvenir<br>straight<br>technique<br>temporary<br>vacuum<br>whether   |  |  |
| <b>E. Vocabulary</b>  |  |  |
| aequus [L] equal equal, equation<br>ago, acta [L] do, things done agent, enact, transact<br>anthropos [G] man, human being anthropology, misanthrope<br>ars [L] art artist, artifact<br>brevis [L] short brevity, abbreviate<br>canto [L] sing chant, cantor<br>caput [L] head captain, decapitate<br>clino [L] to lean, bend incline, decline<br>cognito [L] know cognizant, recognize<br>copia [L] plenty copy, copious<br>credo [L] believe credible, incredulous<br>culpa [L] blame culpable, culprit<br>dominus [L] a lord, master dominate, dominion<br>duco [L] lead abduct, introduce<br>fido [L] to trust, believe confide, infidel<br>fundo, fusum [L] pour, thing poured effusive, transfusion<br>genus [L] kind, origin generic, congenital<br>holos [G] whole holistic, catholic<br>jungo [L] join junction, conjugal<br>lego, lectum [L] read, thing read intellect, legible<br>locus [L] a place local, dislocate<br>loquor [L] speak eloquent, loquacious |  |  |

| Core Knowledge Sequence<br>Grade 8  | Common Core State Standards covered<br>at CK Grade Level | Common Core State Standards covered<br>above or below CK Grade Level |
|---|--|--|
| <p>medius [L] middle mediate, mediocrity<br/> missio [L] a sending emissary, mission<br/> mорий [L] die mortal<br/> nego [L] deny negate<br/> nihil [L] nothing nihilism, annihilate<br/> occido [L] kill homicide, suicide<br/> pathos[G] suffering, feeling sympathy, apathy<br/> pendo [L] weigh, hang depend, pendant<br/> per [L] through perceive, persist, persevere<br/> phobos [G] fear phobia, claustrophobia<br/> plenus [L] full plenty, plenary<br/> positum [L] placed position, opposite<br/> porto [L] carry transport, export<br/> possum [L] be able possible, potent<br/> pugno [L] to fight impugn, pugnacious<br/> punctum [L] point punctual, punctuation<br/> rego [L] to rule regular, regency<br/> sanguis [L] blood sanguine<br/> satis [L] enough satisfy<br/> scio [L] know science, conscious<br/> solus [L] alone solo, desolate<br/> sonus [L] a sound unison, consonant<br/> sophos [G] wise philosophy, sophomore<br/> spiritus [L] breath inspire, spirit<br/> totus [L] whole totalitarianism<br/> tractum [L] drawn, pulled distract, tractor<br/> usus [L] use abuse, utensil<br/> vacuus [L] empty evacuate, vacuum<br/> verbum [L] word verbal<br/> verto [L] turn avert, convert, anniversary<br/> via [L] way, road deviate, viaduct</p> |  |  |

## CHAPTER 1

# Rivers Bring Life to Farms and Cities

**The Big Question:** Why are crops grown close to the Nile and Yellow Rivers?

### Primary Focus Objectives

- ✓ Measure straight-line distances on a map using a map scale. (RI.3.7)
- ✓ Use the maps in the atlas of the Student Reader to find geographic information. (RI.3.7)
- ✓ Describe two ways that rivers bring life to farms and cities. (RI.3.1, RI.3.2)
- ✓ Compare the Nile River and the Yellow River. (RI.3.3)
- ✓ Understand the meaning of the following domain-specific vocabulary: *river*, *riverbank source*, *irrigation*, *silt*, and *flow*. (RI.3.4)

### What Teachers Need to Know

For background information, download the CKHG Online Resource “About Important Rivers of the World”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

**Note:** Prior to conducting this Core Lesson in which students read Chapter 1 in the *World Rivers* Student Reader, we strongly recommend that you first conduct the activities titled World Map (AP 1.1), Map Scale (AP 1.2), and Geographical Terms (AP 1.3), described at the end of this chapter under Additional Activities. The activity pages are found in Teacher Resources, pages 77–89). It is important to provide students with a review of basic map skills before beginning the study of world rivers.

### Materials Needed

Activity Pages



AP 1.1

- Enlarged version of the activity page AP 1.1, found in Teacher Resources, pages 77–78
- colored pencils

# Rivers Make Our Lives Better

**The Big Question:** Why do so many people settle close to major rivers?

## Primary Focus Objectives

---

- ✓ Explain how dams can change rivers to improve people's lives. **(RI.3.1)**
- ✓ Refer to a map and describe the locations of the Yangtze, Indus, and Ganges Rivers. **(RI.3.1)**
- ✓ Explain why the Ganges River is important to people in India. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *flood, dam, reservoir, source, delta, civilization, and mouth*. **(RI.3.4)**

## Core Vocabulary (Student Reader page numbers listed below)

---

**flood, n.** what happens when a river overflows its banks **(10)**

*Example:* The flood covered the fields with five feet of water.

*Variation(s):* floods, flooding, flooded

**dam, n.** a structure that blocks a flowing river and allows water to fill in behind it **(10)**

*Example:* The dam on the river created a lake.

*Variation(s):* dams

**reservoir, n.** a lake created by people for the purpose of storing water **(11)**

*Example:* The reservoir supplied the whole city with drinking water.

*Variation(s):* reservoirs

**source, n.** the starting point or beginning of a river's water **(11)**

*Example:* The river's source was high in the mountains.

*Variation(s):* sources

**delta, n.** land created by silt deposits at the mouth of a river **(11)**

*Example:* Over time, many people settled on the river's delta, where the soil was rich.

*Variation(s):* deltas



# A River Viewed from Above

**The Big Question:** What is the difference between the source and the mouth of a river?

### Primary Focus Objectives

---

- ✓ Describe the mouth and the source of a river. (RI.3.1)
- ✓ Refer to a map and identify the location of the Murray River. (RI.3.1)
- ✓ List at least two ways people use the Murray River. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *drainage basin*, *orchard*, *vineyard*, and *pasture*. (RI.3.4)

### Core Vocabulary (Student Reader page numbers listed below)

---

**drainage basin, n.** the area drained by a main river and other connected rivers (16)

*Example:* The drainage basin for the river covered several states.

*Variation(s):* drainage basins

**orchard, n.** an area where a large number of fruit trees have been planted (16)

*Example:* The apple orchard covered the entire field.

*Variation(s):* orchards

**vineyard, n.** an area where grapes are grown on plants called vines (18)

*Example:* The vineyard produced a special type of grape.

*Variation(s):* vineyards

**pasture, n.** land set aside for cows, horses, or other animals to feed off the natural grasses (18)

*Example:* Dozens of cows stood quietly in the pasture.

*Variation(s):* pastures

# Dangers and Navigation Along Rivers

**The Big Question:** What are the dangers boats face on rivers?

## Primary Focus Objectives

- ✓ List three dangers that boat captains must look out for on rivers. **(RI.3.1)**
- ✓ Describe the dangers on the Mississippi River and the Ob River. **(RI.3.1)**
- ✓ Describe the locations of the Mississippi River and the Ob River. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *sandbar*, *current*, *tributary*, *swamp*, *wasteland*, and *thermometer*; and of the phrase “river pilot.” **(RI.3.4)**

## Core Vocabulary (Student Reader page numbers listed below)

**“river pilot,” (phrase)**, a person whose job is to guide boats safely on a river **(20)**

*Example:* The river pilot steered the boat safely away from the rocks in the river.

*Variation(s):* river pilots

**sandbar, n.** a buildup of sand formed by the movement of flowing water **(22)**

*Example:* If a boat hit a sandbar in the river, it might get stuck.

*Variation(s):* sandbars

**current, n.** the ongoing movement of water, such as in a river **(22)**

*Example:* The river’s current carried the boat downstream.

*Variation(s):* currents

**tributary, n.** a stream or smaller river that flows into a larger river **(22)**

*Example:* The stream was a tributary of the mighty Mississippi River.

*Variation(s):* tributaries

**swamp, n.** a flat wooded area that is often flooded **(25)**

*Example:* Alligators often live in or near swamps.

*Variation(s):* swamps

# Wildlife on Wild Rivers

**The Big Question:** How do rivers support wildlife?

## Primary Focus Objectives

---

- ✓ Explain how rivers provide good habitats for wildlife. (RI.3.1)
- ✓ Refer to a map and describe the locations and major features of the Amazon, Orinoco, and Mackenzie Rivers. (RI.3.1)
- ✓ Understand the meaning of the following domain-specific vocabulary: *piranha*, *humid*, *waterfall*, *Arctic Ocean*, *Northern Hemisphere*, and *migrate*. (RI.3.4)

## Materials Needed

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- Photographs of piranhas to show students

## Core Vocabulary (Student Reader page numbers listed below)

---

**piranha, n.** type of flesh-eating fish of South America that lives in fresh water (26)

*Example:* The piranha's mouth is full of sharp teeth.

*Variation(s):* piranhas

**humid, adj.** having a lot of moisture in the air (26)

*Example:* The humid air made my skin feel damp and sticky.

*Variation(s):* humidity

**waterfall, n.** a place where water flows over the edge of a cliff (31)

*Example:* People traveled from long distances to view the great waterfall.

*Variation(s):* waterfalls

**Arctic Ocean, n.** one of the four major oceans, located in the Northern Hemisphere. It is the smallest and shallowest of the world's major oceans. (31)

*Example:* Ice is a major danger for ships on the Arctic Ocean.

**Northern Hemisphere, n.** the half of the earth located north of the equator (31)

*Example:* The United States is located in the Northern Hemisphere.

# Three Rivers and Many Waterfalls

**The Big Question:** How do rapids and waterfalls affect river travel?

## Primary Focus Objectives

- ✓ Explain how waterfalls make river navigation difficult. (RI.3.1)
- ✓ Describe ways that boats can travel on rivers with waterfalls. (RI.3.1)
- ✓ Refer to maps and describe the locations of the Iguazu, Paraná, Congo, and Yukon Rivers. (RI.3.1)
- ✓ Understand the meaning of the following domain-specific vocabulary: *landlocked* and *rapids*. (RI.3.4)

## Core Vocabulary (Student Reader page numbers listed below)

**landlocked, adj.** cut off from the seacoast; surrounded by land (34)

*Example:* The country is landlocked, without any access to the ocean or sea.

**rapids, n.** a place on a river where the water moves swiftly and violently (34)

*Example:* The canoe bumped through the rapids at high speed.

## THE CORE LESSON 25 MIN

### Introduce “Three Rivers and Many Waterfalls”

5 MIN

Ask students to briefly summarize what they have learned about rivers so far. How do rivers support life for both humans and animals? What kinds of challenges and dangers might one encounter while trying to navigate different rivers?

Ask students to turn to page 30 in their Readers to examine the picture of Angel Falls in South America. Ask them to think about what causes a waterfall (*a sudden drop in the river's elevation*). Call attention to the Big Question, and explain the meaning of the vocabulary word *rapids*; encourage students to look for ways rapids and waterfalls can affect river travel.

# Rivers and Trade

**The Big Question:** Why are the Rhine, Danube, Volga and Niger Rivers so important to the countries they flow through?

## Primary Focus Objectives

---

- ✓ Explain how rivers help people trade with each other. (RI.3.2)
- ✓ Refer to a map and describe the locations of the Rhine, Danube, Volga, and Niger Rivers. (RI.3.1)
- ✓ Understand the meaning of the following domain-specific vocabulary: *toll*, *network*, and *canal*; and of the phrase “manufactured good.” (RI.3.4)

## Core Vocabulary (Student Reader page numbers listed below)

---

**toll, n.** money charged for use of a road or waterway (40)

*Example:* River pilots were charged a toll for traveling on the river.

*Variation(s):* tolls

**“manufactured good,” (phrase),** item made in large numbers for sale or trade (41)

*Example:* The country was known for producing a certain type of manufactured good.

*Variation(s):* manufactured goods

**network, n.** a connected system such as roads or waterways (41)

*Example:* The country’s trade was aided by its large network of roads.

*Variation(s):* networks

**canal, n.** a channel dug by people, used by boats or for irrigation (41)

*Example:* Workers finished the canal, which greatly increased the region’s trade.

*Variation(s):* canals

# Romulus and Remus

**The Big Question:** According to legend, how did the city of Rome begin?


## Primary Focus Objectives

- ✓ Retell the legend of Romulus and Remus. (RL.3.2)
- ✓ Explain how the city of Rome began. (RI.3.3)
- ✓ Explain the meanings of BCE and CE and BC and AD. (RI.3.4)
- ✓ Read a map to learn the geography of the Mediterranean region and the extent of Roman control. (RI.3.7)
- ✓ Understand the meaning of the following domain-specific vocabulary: *capital*, *legend*, *king*, and *representative*. (RI.3.4)

## What Teachers Need to Know

For more background information, download the CKHG Online Resource “About Romulus and Remus”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

 **Note:** Prior to conducting this Core Lesson in which students read Chapter 1 in the *Ancient Rome* Student Reader, we strongly recommend that you first conduct the activities titled World Map and World Geography, using AP 1.1 and 1.2, and Map of the Mediterranean Region and Geography of the Mediterranean Region, using AP 1.3 and 1.4. These activities are described at the end of this lesson under Additional Activities. By first providing students with an understanding of the geographical features of the Mediterranean region, such as the sea, mountains, rivers, and coastline, they will be able to more fully appreciate the size and geographic diversity of the Roman world.

## Materials Needed

Activity Pages



AP 1.1  
AP 1.2  
AP 1.3  
AP 1.4

- World Map (AP 1.1), World Geography (AP 1.2), Map of the Mediterranean Region (AP 1.3), and Geography of the Mediterranean Region (AP 1.4), found in Teacher Resources, pages 137–140. (**Note:** the World Map and Map of the Mediterranean Region will be used again in Chapters 4, 6, 7, and 9)
- enlarged versions of the activity page maps
- colored pencils

# Roman Gods and Goddesses

**The Big Question:** What does this story tell you about the importance of gods in the lives of Romans?

## Primary Focus Objectives

---

- ✓ Describe the role of gods and goddesses in the Roman belief system. **(RI.3.2)**
- ✓ Identify Juno, Mars, Vesta, and Janus as Roman gods. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *god, goddess, holy, temple, sacred, symbol, ember, and charcoal*. **(RI.3.4)**

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Roman Deities”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

---

**god, n.** a being in the shape of a man who has the power to affect nature or people’s lives **(8)**

*Example:* Romulus and Remus were the sons of Mars, the Roman god of war.

*Variation(s):* gods

**goddess, n.** a being in the shape of a woman who has the power to affect nature or people’s lives **(10)**

*Example:* The Romans believed the goddess Vesta watched over their homes.

*Variation(s):* goddesses

**holy, adj.** having to do with a god or religion **(10)**

*Example:* Homes kept a holy fire burning to honor the goddess Vesta.

**temple, n.** a building used for worship **(11)**

*Example:* The Temple of Vesta in the Roman Forum honored the Roman goddess of the hearth and home.

*Variation(s):* temples

# The Roman Republic

**The Big Question:** In ancient Rome, what was the difference between patricians and plebeians?

## Primary Focus Objectives

- ✓ Identify patricians and their role in Roman society. (RI.3.2)
- ✓ Identify plebeians and their role in Roman society. (RI.3.2)
- ✓ Explain the role of the Senate in the Roman Republic. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *chariot*, *patrician*, *senator*, *citizen*, *plebeian*, *republic*, *assembly*, *Senate*, *consul*, *dictator*, and *Forum*. (RI.3.4)

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About Founding of Republic”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

This chapter explains the workings of the early Roman Republic. In the early republic, only patricians served as consuls. However, in later years—specifically, by the fourth century—there were consuls from plebeian families too.

## Core Vocabulary (Student Reader page numbers listed below)

**chariot, n.** a carriage with two wheels that was pulled by horses or other animals (16)

*Example:* Racing in horse-drawn chariots was a popular sport in Rome, but chariots were also used in parades.

*Variation(s):* chariots

**patrician, n.** a member of ancient Rome’s highest social class; a wealthy landowner in ancient Rome (17)

*Example:* In the early Roman Republic, the patricians held the most power.

*Variation(s):* patricians



## CHAPTER 4

# The Punic Wars

**The Big Question:** What bold attack did Hannibal make in the Second Punic War?

### Primary Focus Objectives

- ✓ Identify Latin as the language spoken by the ancient Romans. **(RI.3.1)**
- ✓ Identify the Punic Wars as struggles between Rome and Carthage. **(RI.3.2)**
- ✓ Identify Hannibal and understand his role in the Punic Wars. **(RI.3.2)**
- ✓ Understand the outcome of the Punic Wars. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *conquer*, *peninsula*, *nation*, *formation*, and *barrier*. **(RI.3.4)**

### What Teachers Need to Know

For background information, download the CKHG Online Resource “About the Punic Wars”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Materials Needed

Activity Page



AP 1.3

Display copy of Map of the Mediterranean Region and/or student copies of AP 1.3, found in the Teacher Resources section (page 139).

### Core Vocabulary (Student Reader page numbers listed below)

**conquer, v.** to win control of a land and its people by attacking an enemy or fighting a war **(22)**

*Example:* Rome used its strong army to conquer its neighbors.

*Variation(s):* conquered

**peninsula, n.** a piece of land sticking out into a body of water, so that it is almost surrounded by water **(22)**

*Example:* Rome is located near the center of the Italian peninsula, which looks like a boot in the Mediterranean Sea.

**nation, n.** the land and people who live under the authority of a government and its laws; a country **(22)**

# Julius Caesar

**The Big Question:** Why did some Romans think Julius Caesar was a hero?

## Primary Focus Objectives

- ✓ Understand how Roman armies increased the area under Rome’s control. **(RI.3.2)**
- ✓ Recognize that the Greeks influenced Roman culture. **(RI.3.2)**
- ✓ Explain why some wealthy people in the Roman Republic became richer while many poor people became poorer. **(RI.3.2)**
- ✓ Identify Julius Caesar and describe his role in adding more provinces to Rome’s control. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *province, governor, tax, border, and civil war*. **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About Julius Caesar”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

This chapter discusses the disenfranchisement of Roman farmers. The Student Reader gives a simplified explanation of what happened. During this era, smaller landholders—the peasant farmers who tended to form the core of the Roman army—were losing their farms to the large estates of the wealthy. Sometimes the farmers/soldiers were away at war for extended periods of time (or died on campaign). Once landless, the peasant farmers tended to drift to the cities, especially to Rome, swelling the urban population. So the estates of the wealthy became larger and larger, worked by enslaved people, while the smaller farmers lost their lands and often moved to the city.

## Core Vocabulary **(Student Reader page numbers listed below)**

**province, n.** an area or region; when an area was conquered by Rome, it became a province under Roman control **(28)**

*Example:* The Roman army added more and more provinces that were ruled by Rome.

*Variation(s):* provinces

**governor, n.** the leader of the government in a province **(28)**

*Example:* The Roman Senate appointed a governor to rule a province of the empire.

*Variation(s):* governors

## CHAPTER 6

# Cleopatra, Queen of Egypt

**The Big Question:** What did Julius Caesar do in order to protect Cleopatra?

### Primary Focus Objectives

- ✓ Describe how Julius Caesar met Cleopatra. (RI.3.2)
- ✓ Identify several examples that indicate that Cleopatra wanted to be a good ruler. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *barge* and *descendant*. (RI.3.4)

### Core Vocabulary (Student Reader page numbers listed below)

**barge, n.** a boat with a flat bottom, usually used for carrying goods (36)

*Example:* Legend says that Caesar traveled down the Nile River on a barge with Cleopatra.

*Variation(s):* barges

**descendant, n.** someone who is related to a person or group of people who lived in the past (37)

*Example:* Cleopatra believed she was a descendant of one of Alexander the Great's best generals.

*Variation(s):* descendants

### THE CORE LESSON 25 MIN

#### Introduce “Cleopatra, Queen of Egypt”

5 MIN

Remind students that at the end of the last lesson, they learned that the king of Egypt had Pompey killed—and that this was a terrible mistake. Ask students why they think this might have been a mistake. Tell students that in this chapter they will read about what happened in Egypt after Pompey had been killed.

Draw students' attention to the Big Question. As they read, ask them to pay particular attention to what Julius Caesar had to do in order to protect Cleopatra.

# Julius Caesar Dies

**The Big Question:** What were the reasons behind the actions taken against Julius Caesar and Marc Antony?

## Primary Focus Objectives

- ✓ State the meaning of “*Veni, vidi, vici.*” (RI.3.4)
- ✓ Describe the circumstances under which Julius Caesar became a dictator. (RI.3.3)
- ✓ Describe why Julius Caesar was assassinated. (RI.3.2, RI.3.3)
- ✓ Describe the civil war that followed Caesar’s death. (RI.3.3)
- ✓ Identify Brutus, Marc Antony, and Octavian and their roles in Caesar’s assassination and its aftermath. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *assassinate, toga, empire, foreigner, supplies, and noble.* (RI.3.4)

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About Julius Caesar and After Caesar”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Page



AP 1.3

Display copy of the Map of the Mediterranean Region (AP 1.3), found in the Teacher Resources section (page 139).

## Core Vocabulary (Student Reader page numbers listed below)

**assassinate, v.** to kill a ruler or member of the government (40)

*Example:* Members of the Senate wanted to assassinate Julius Caesar because they thought he was trying to become a king.

*Variation(s):* assassinates, assassinated, assassination

# Caesar Augustus

**The Big Question:** What were some of Caesar Augustus’s many accomplishments?

## Primary Focus Objectives

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- ✓ Identify Octavian and Caesar Augustus as the same person, known by two different names. **(RI.3.2)**
- ✓ Identify the accomplishments of Caesar Augustus. **(RI.3.2)**
- ✓ Describe Caesar Augustus’s behavior toward the Senate. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *aqueduct*, *patron*, and *emperor*; and of the phrase “religious ceremony.” **(RI.3.4)**

## What Teachers Need to Know

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To learn more about specific topics in the unit, download the CKHG Online Resource “About Caesar Augustus”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary **(Student Reader page numbers listed below)**

---

**aqueduct, n.** a structure for carrying water across long distances **(47)**

*Example:* The Romans built an aqueduct to bring water into the city.

*Variation(s):* aqueducts

**“religious ceremony,” (phrase),** a formal event to honor a god or goddess **(48)**

*Example:* The old religious ceremony had great meaning for many Romans.

*Variation(s):* religious ceremonies

**patron, n.** a person who gives money or other support to someone, such as an artist **(49)**

*Example:* The wealthy Roman became a patron to the author by giving him money so that he could keep writing books.

*Variation(s):* patrons

**emperor, n.** the ruler of an empire **(49)**

*Example:* Caesar Augustus was the first emperor of Rome, even though he never used the title.

*Variation(s):* emperors

# Roman Lands

**The Big Question:** How did the Mediterranean Sea and Roman roads help the Romans manage their empire?

## Primary Focus Objectives

- ✓ Locate the Roman Empire on a world map. **(RI.3.7)**
- ✓ Identify the countries that occupy that area today. **(RI.3.7)**
- ✓ Identify the dominant natural features of the Roman Empire. **(RI.3.7)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *continent*, *mountain range*, *strait*, and *kingdom*. **(RI.3.4)**

## Materials Needed

Activity Page



AP 1.3  
AP 9.1

Display copy of Map of the Mediterranean Region (AP 1.3), found in the Teacher Resources section (page 139); display copy of Geography of the Roman Empire (AP 9.1), found in the Teacher Resources section, page 154, or sufficient copies for students.

## Core Vocabulary (Student Reader page numbers listed below)

**continent, n.** one of the seven large land areas on Earth **(50)**

*Example:* Rome is located on the Italian peninsula, which is part of the continent of Europe.

*Variation(s):* continents

**mountain range, n.** a line of mountains **(52)**

*Example:* The Alps are the mountain range that Hannibal crossed to reach Italy from Spain.

*Variation(s):* mountain ranges

**strait, n.** a narrow body of water that connects two large bodies of water **(53)**

*Example:* The Strait of Gibraltar connects the Atlantic Ocean and the Mediterranean Sea.

*Variation(s):* straits

**kingdom, n.** a country ruled by a king or queen **(54)**

*Example:* Rome began as a kingdom.

*Variation(s):* kingdoms

# Roads, Bridges, and Aqueducts

**The Big Question:** How did Roman engineering skills help the Roman Empire become so successful?

## Primary Focus Objectives

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- ✓ Recognize the network of roads, bridges, and aqueducts as an important strength of the Roman Empire. **(RI.3.2)**
- ✓ Understand the technology used to build these structures. **(RI.3.2)**
- ✓ Explain how aqueducts were used. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *scroll, gravel, surface, valley, pillar, stake, and arch*. **(RI.3.4)**

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Life in the Roman Empire”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary **(Student Reader page numbers listed below)**

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**scroll, n.** a roll of paper or other material with written information **(56)**

*Example:* The student unrolled the scroll that contained the ancient writing.

*Variation(s):* scrolls

**gravel, n.** tiny stones used to make paths or to make concrete **(59)**

*Example:* The Romans used gravel to help make their roads strong.

**surface, n.** the top layer **(59)**

*Example:* The surface of a Roman road was usually made with flat rocks.

# The Buildings of Rome

**The Big Question:** How was Rome similar to a modern city?

## Primary Focus Objectives

---

- ✓ Describe ancient Rome as a crowded and busy city. **(RI.3.2)**
- ✓ Explain what the Temple of Jupiter is and the significance of its location in Rome. **(RI.3.2)**
- ✓ Describe the activities that took place in Rome’s markets and the Forum. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *gladiator* and *marble*. **(RI.3.4)**

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Life in the Roman Empire”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

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**gladiator, n.** a man in ancient Rome who fought another man or an animal to entertain the public **(64)**

*Example:* Gladiator fights were a popular sport in ancient Rome.

*Variation(s):* gladiators

**marble, n.** a kind of stone that is used in buildings and sculptures **(65)**

*Example:* The Romans used marble in buildings such as the Temple of Jupiter.

## Materials Needed

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Use this link to download the CKHG Online Resources for this unit, where a link for a collection of photographs, “City Photos,” may be found:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)



# Gladiators and Chariot Races

**The Big Question:** How were the Colosseum and Circus Maximus similar, and how were they different?

## Primary Focus Objectives

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- ✓ Recognize the Colosseum and understand its structure. (RI.3.2)
- ✓ Describe how the Colosseum was used. (RI.3.2)
- ✓ Describe the structure and uses of the Circus Maximus. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *Colosseum*, *arena*, and *chamber*. (RI.3.4)

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Gladiators and Chariot Races”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

---

**Colosseum, n.** a large stadium in ancient Rome (68)

*Example:* The Colosseum was used for gladiator contests and other events in ancient Rome.

**arena, n.** an area surrounded by seating for the public, where sports events are held (70)

*Example:* Thousands of Romans went to the arena called the Colosseum to watch gladiators fight.

*Variation(s):* arenas

**chamber, n.** a small space or room (70)

*Example:* The gladiators were kept in a chamber underneath the Colosseum.

*Variation(s):* chambers

# Pompeii

**The Big Question:** What do the ruins of Pompeii tell us about life in ancient Rome?

## Primary Focus Objectives

---

- ✓ Explain the effect of the eruption of Mount Vesuvius in 79 CE on the people of Pompeii. (RI.3.2)
- ✓ Explain how the eruption of Mount Vesuvius has aided our understanding of daily life in the Roman Empire. (RI.3.2)
- ✓ Describe daily life in Pompeii in 79 CE. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *ruin*, *pollution*, *preserve*, *volcano*, *Earth's crust*, *debris*, *archaeologist*, *trade*, *mosaic*, and *amphitheater*. (RI.3.4)

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Pompeii”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

---

**ruin, n.** what remains of an old building or structure (76)

*Example:* Today, the Colosseum is a ruin.

*Variation(s):* ruins

**pollution, n.** something that makes land, water, or air dirty and unsafe (76)

*Example:* Ruins, such as the Colosseum, have been damaged by pollution from cars.

**preserve, v.** to keep or save (78)

*Example:* Historians and scientists work to preserve ancient buildings such as the Pantheon.

*Variation(s):* preserved

**volcano, n.** a mountain that has cracks leading to openings deep inside the earth from which hot, melted rock may sometimes erupt (78)

*Example:* The eruption of a volcano destroyed the Roman city of Pompeii.

*Variation(s):* volcanoes

# The Romans and the Christians

**The Big Question:** Why was Christianity considered to be dangerous to Rome?

## Primary Focus Objectives

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- ✓ Identify what *Pax Romana* was. (RI.3.4)
- ✓ Explain why the Romans persecuted the early Christians. (RI.3.2)
- ✓ Describe the effects of persecution on the early Christians. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary, *persecute*, and of the phrase “religious belief.” (RI.3.4)

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About the Persecution of Christians”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

---

**persecute, v.** to treat people cruelly and unfairly (88)

*Example:* It was common for Roman officials to persecute Christians.

*Variation(s):* persecutes, persecuted, persecution

**persecution, n.** cruel and unfair treatment of a group of people

**“religious belief,” (phrase),** an idea about gods or faith that someone accepts as true (88)

*Example:* A key religious belief of Christians is that there is only one god.

*Variation(s):* religious beliefs

# The Decline of the Roman Empire

**The Big Question:** What did Diocletian do to help prevent the total collapse of the Roman Empire?

### Primary Focus Objectives

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- ✓ Identify some of the causes that led to the decline of the Roman Empire. (RI.3.2)
- ✓ Describe the barbarians and understand their role in the decline of the Roman Empire. (RI.3.2)
- ✓ Identify Diocletian. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *assignment*, *decline*, *corrupt*, *pillage*, and *collapse*. (RI.3.4)

### What Teachers Need to Know

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For background information, download the CKHG Online Resource “About the Decline of the Western Empire”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Core Vocabulary (Student Reader page numbers listed below)

---

**assignment, n.** a task or job given to someone (90)

*Example:* Luciano learned to like the assignments about Roman history that his teacher gave him.

*Variation(s):* assignments

**decline, v.** to grow weaker (90)

*Example:* After the *Pax Romana*, wars, illness, and invasions caused the Roman Empire to decline.

*Variation(s):* declined

**corrupt, adj.** having done something dishonest for personal gain (92)

*Example:* Weak emperors were often corrupt and did what was best for themselves instead of what was best for the empire.

*Variation(s):* corruption

## CHAPTER 16

# East and West

**The Big Question:** Why did the Western Empire collapse but the Eastern Empire survive for much longer?

### Primary Focus Objectives

- ✓ Identify Constantine as the first Christian emperor. (RI.3.2)
- ✓ Identify the areas of the Eastern and Western Empires on a map and name their capitals. (RI.3.2)
- ✓ Describe the fall of the Western Empire and the continuation of the Eastern Empire. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *practice* and *sack*. (RI.3.4)

### What Teachers Need to Know

For background information, download the CKHG Online Resource “About Constantine, the Eastern Empire, the Sack of Rome”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Core Vocabulary (Student Reader page numbers listed below)

**practice, v.** to live according to the teachings of a religion or other set of ideas (98)

*Example:* Emperor Constantine allowed Christians to practice their religion without fear of being persecuted.

*Variation(s):* practices, practiced, practicing

**sack, v.** to steal and destroy things in a city that has been defeated by an army (101)

*Example:* The barbarians decided to sack Rome.

*Variation(s):* sacks, sacked, sacking

## THE CORE LESSON 25 MIN

### Introduce “East and West”

5 MIN

Ask students if they remember what the emperor Diocletian did to the Roman Empire. (*He divided it into two parts.*) Ask students if they think this was a good idea or a bad idea. What dangers might be involved in separating the empire into two parts? What advantages might there be? (*The two parts could grow apart; on the other hand, if one were conquered, the other might survive.*)

## CHAPTER 1

# The Vikings

**The Big Question:** What did it mean to go “a-viking,” and how does this show the Viking way of life?

### Primary Focus Objectives

- ✓ Identify and locate Scandinavia, the Vikings’ homeland, on a world map. (RI.3.2)
- ✓ Describe the Vikings’ way of life at home and at sea. (RI.3.1)
- ✓ Describe the purpose of runes. (RI.3.1)
- ✓ Understand the meaning of the following domain-specific vocabulary: *raid, fjord, blacksmith, jarl, plunder, ransom, and rune*. (RI.3.4)

### What Teachers Need to Know

For background information, download the CKHG Online Resource “About the Viking World”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

**Note:** Prior to conducting the Core Lesson, in which students read Chapter 1 of *The Vikings* Student Reader, we strongly recommend that your students first examine the World Map (AP 1.1) found in Teacher Resources (page 60) and described at the end of this chapter under Additional Activities. By first being provided with an understanding of the location of the Vikings relative to the rest of the world, students will be able to more fully appreciate the role of sailing in Viking culture and the importance of Viking exploration and discovery. We also recommend that your students do the Viking Runes activity, AP 1.2, described on page 19 and found in Teacher Resources, page 61, prior to the Core Lesson.

### Materials Needed

Activity Page



AP 1.1  
AP 1.2

- Display and student copies of World Map (AP 1.1)
- Display and student copies of Viking Runes (AP 1.2)

Use this link to download the CKHG Online Resource “Images of a Fjord”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

# Traders and Raiders

**The Big Question:** How did the Vikings get the riches they brought back to their homeland?

## Primary Focus Objectives

- ✓ Recognize that in addition to being skilled sailors and traders, the Vikings were also fierce and terrifying raiders. **(RI.3.1)**
- ✓ Explain the origin of the word *berserk*. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *oarsmen*, *berserker*, *tow*, *cargo*, and *goblet*. **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About Sailors, Traders, and Raiders”:  
[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Page



AP 2.1

- Display and student copies of The Viking World (AP 2.1)

## Core Vocabulary (Student Reader page numbers listed below)

**oarsmen, n.** on a ship, those who are responsible for rowing **(8)**

*Example:* The young boys looked forward to being oarsmen on a Viking longship.

*Variation(s):* oarsman

**berserker, n.** one of the most fearless and frightening Viking warriors **(10)**

*Example:* The berserker shocked and frightened the villagers during the raid.

*Variation(s):* berserkers

**tow, v.** to drag **(10)**

*Example:* Once the Vikings reached shallow water, they stopped rowing so they could tow the boat ashore.

*Variation(s):* tows, towing, towed

# Viking Sailors and Ships

**The Big Question:** Why were ships so important to the Viking way of life?

## Primary Focus Objectives

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- ✓ Understand the importance of ships and sailing to the Vikings. **(RI.3.1)**
- ✓ Describe how the Vikings navigated. **(RI.3.1)**
- ✓ Explain the importance of the storyteller to the Vikings. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *moored*, *prow*, and *mast*. **(RI.3.4)**

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Sailors, Traders and Raiders”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

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**moored, adj.** secured in place using chains, ropes, or an anchor **(18)**

*Example:* The moored ship stayed in place where the Vikings had fastened it until they were ready to set sail.

*Variation(s):* moor, mooring

**prow, n.** the pointed front end of a ship **(18)**

*Example:* The Viking shipbuilder decorated the prow of the ship with the sculpture of a fearsome creature.

*Variation(s):* prows

**mast, n.** a large vertical post on a ship that helps hold up the sails **(18)**

*Example:* The sailor ran the sail of the ship up the tall mast.

*Variation(s):* masts



## CHAPTER 4

# Eric the Red

**The Big Question:** Why did Eric the Red name the land west of Iceland, Greenland?

### Primary Focus Objectives

---

- ✓ Recognize the Vikings' achievements as explorers. **(RI.3.1)**
- ✓ Identify Eric the Red and explain why he traveled from Iceland to Greenland. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *feast*, *hush*, and *banish*. **(RI.3.4)**

### What Teachers Need to Know

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For background information, download the CKHG Online Resource "About Eric the Red":

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Materials Needed

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Activity Page



AP 2.1

- Display and student copies of The Viking World (AP 2.1)

### Core Vocabulary (Student Reader page numbers listed below)

---

**feast, n.** a large meal held to celebrate a day or event **(22)**

*Example:* The Vikings spent many hours at the feast, eating and celebrating after their long journey.

*Variation(s):* feasts, feasting

**hush, n.** silence **(22)**

*Example:* A hush fell over the crowd as the storyteller began to speak.

**banish, v.** to force someone to leave and stay away from a place **(22)**

*Example:* The Vikings decided to banish Eric the Red as a form of punishment.

*Variation(s):* banishes, banishing, banished

## CHAPTER 5

# Leif Eriksson

**The Big Question:** Why might Vikings have once believed that Greenland was the end of the world?

### Primary Focus Objectives

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- ✓ Identify the role of a Viking storyteller. (RI.3.1)
- ✓ Recognize the Vikings as the first Europeans to cross the Atlantic Ocean to Newfoundland, Canada. (RI.3.1)
- ✓ Understand that much of what we know about the Vikings has been learned from archaeological discoveries. (RI.3.1)
- ✓ Identify Leif Eriksson, also known as “Leif the Lucky.” (RI.3.1)
- ✓ Understand the meaning of the following domain-specific vocabulary: *pasture*. (RI.3.4)

### What Teachers Need to Know

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For background information, download the CKHG Online Resource “About Leif Erikson”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Materials Needed

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Activity Page



AP 1.1  
AP 5.1  
AP 5.2

- Display copy of the World Map (AP 1.1)
- Display and student copies of Viking Voyages West (AP 5.1)
- Display and student copies of More Viking Runes (AP 5.2)

### Core Vocabulary (Student Reader page numbers listed below)

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**pasture, n.** land covered with grass on which farm animals feed (29)

*Example:* The new farm had a large pasture for the cows to feed on.

*Variation(s):* pastures

# Viking Gods and Myths

**The Big Question:** How did myths help the Vikings make sense of their world?

## Primary Focus Objectives

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- ✓ Understand that the Vikings were also known as the Norse. **(RI.3.1)**
- ✓ Understand that Vikings' myths helped them explain the mysteries of nature. **(RI.3.1)**
- ✓ Explain the Norse creation story. **(RI.3.1)**
- ✓ Identify Asgard, Valhalla, and the Norse gods, including Odin, Thor, Loki, Frigg, Balder, and Sif. **(RI.3.1)**
- ✓ Identify the Norse gods that inspired the English names for days of the week: Tyr, Odin (Wodin), Thor, and Frigg (Friia). **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *Norse, myth, underworld, realm, wisdom, and maiden*. **(RI.3.4)**

## What Teachers Need to Know

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For background information, download the CKHG Online Resource "About Norse Myths":

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

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**Norse, n.** people who lived in Scandinavia long ago **(32)**

*Example:* The Norse traveled from their homes in Scandinavia to new lands in North America.

**myth, n.** an idea or story that many people believe but is not true **(32)**

*Example:* One Viking myth says that the gods create the weather.

*Variation(s):* myths

**underworld, n.** a place where it was believed that people went when they died **(34)**

*Example:* One Viking myth describes which god controls the underworld.

*Variation(s):* underworlds

**realm, n.** a kingdom **(34)**

*Example:* Odin's realm was very large; he ruled over many gods, people, and creatures.

*Variation(s):* realms

# Beringia: The Land Bridge

**The Big Question:** What was Beringia?

## Primary Focus Objectives

- ✓ Understand that nomadic hunters may have made their way from Asia to North America by crossing a land bridge located in the Bering Strait. **(RI.3.2)**
- ✓ Describe how Ice Age people of Beringia lived. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *Ice Age, land bridge, ice sheet, hunter-gatherers, herd, mammoth, musk ox, and spear.* **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About the Land Bridge”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Page



AP 1.1

- Display and individual student copies of World Map (AP 1.1)
- Use this link to download the CKHG Online Resources, where specific links to the Yukon Beringia Interpretive Center and other images of the Ice Age may be found:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

**Ice Age, n.** a period in Earth’s history when huge sheets of ice covered large parts of Earth’s surface **(2)**

*Example:* During the Ice Age, there were far fewer sources of available food.

**land bridge, n.** a small strip of land that connects two large land masses **(2)**

*Example:* Early humans crossed a land bridge from Asia into North America.

*Variation(s):* land bridges

# America's First Settlers

**The Big Question:** How did the ability to grow food change the way people lived?

## Primary Focus Objectives

- ✓ Explain how America's first settlers divided into many groups and spread throughout North and South America. **(RI.3.2)**
- ✓ Explain the impact of farming on how people lived. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *river valley*, *mastodon*, and *soil*. **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource "About America's First Settlers":

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Pages



AP 1.1  
AP 2.1

- Display copy of World Map (AP 1.1)
- Individual student copies of Domain Vocabulary: Chapters 1–2 (AP 2.1)

## Core Vocabulary (Student Reader page numbers listed below)

**river valley, n.** an area of low land surrounded by mountains or hills, often with a river running through it **(12)**

*Example:* Settling in a river valley gave the earliest Americans access to water for growing crops.

*Variation(s):* river valleys

**mastodon, n.** a large, prehistoric animal similar to an elephant and a mammoth **(12)**

*Example:* The mastodon, like the mammoth, was an important source of food for early humans.

*Variation(s):* mastodons

# People of the Far North

**The Big Question:** What were the differences between life in the summer and life in the winter for the Inuit?

## Primary Focus Objectives

- ✓ Identify the Inuit people, and explain how they came to North America. **(RI.3.2)**
- ✓ Describe the way of life of the Inuit. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *northern lights*, *ancestor*, *caribou*, *hide*, *igloo*, and *fuel*. **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About the People of the Far North”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Page



AP 1.1

- Display copy of World Map (AP 1.1)

## Core Vocabulary (Student Reader page numbers listed below)

**northern lights, n.** soft, colorful light that appears in the sky in northern lands, caused by the reflection of sunlight **(14)**

*Example:* The Inuit boy watched as the northern lights danced across the sky.

**ancestor, n.** a relative who lived a long time ago **(16)**

*Example:* Mammoths and elephants share a distant ancestor.

*Variation(s):* ancestors

**caribou, n.** a species of deer native to North America **(17)**

*Example:* Caribou were an important source of meat and hides for early people living in the Arctic.

# Ancestral Pueblo and Mound Builders

**The Big Question:** How would you compare the settlements built by the Ancestral Pueblo to those built by the Mound Builders?

## Primary Focus Objectives

- ✓ Describe the accomplishments and way of life of the Ancestral Pueblo and the Mound Builders. **(RI.3.2)**
- ✓ Compare the Ancestral Pueblo and the Mound Builders. **(RI.3.1)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *cliff dweller, canyon, Pueblo, adobe, mineral, and mound*. **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About the Ancestral Pueblo and Mound Builders”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Pages



AP 1.1  
AP 4.1

- Display copy of World Map (AP 1.1)
- Display and individual student copies of Native American Culture Regions (AP 4.1)
- Use this link to download the CKHG Online Resources for this unit, where specific links about ancestral Pueblo culture may be found:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

**cliff dweller, n.** a person who lives on a rock ledge or cliff wall, such as a member of the Ancestral Pueblo people **(20)**

*Example:* The cliff dweller climbed a ladder to his home on the side of a cliff.

*Variation(s):* cliff dwellers

# After the Ancestral Pueblo

**The Big Question:** What are some of the reasons why some Native American groups moved from place to place?

## Primary Focus Objectives

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- ✓ Describe the ways of life of the Hopi, Zuni, Navajo, Apache, and Comanche. **(RI.3.2)**
- ✓ Locate the Native American nations of the Southwest. **(RI.3.1)**
- ✓ Identify and describe Native American artwork including Hopi kachina dolls and Navajo blankets, rugs, and sand paintings. **(RI.3.7)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *mesa* and *game*. **(RI.3.4)**

## What Teachers Need to Know

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For background information, download the CKHG Online Resource “About After the Ancestral Pueblo and Mound Builders”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

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Activity Pages



AP 1.1  
AP 4.1  
AP 5.1

- World Map (AP 1.1)
- Display and individual student copies of Native American Culture Regions (AP 4.1)
- Individual student copies of Design a Navajo Rug (AP 5.1); colored pencils or crayons
- Internet access to images of Native American art, available at:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

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**mesa, n.** from the Spanish word for table, a rocky, flat-topped hill **(32)**

*Example:* We visited a Pueblo village on a high mesa.

*Variation(s):* mesas



## CHAPTER 6

# After the Mound Builders

**The Big Question:** What were the key characteristics of the Creek, Seminole, and Cherokee Nations?

### Primary Focus Objectives

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- ✓ Describe the ways of life of the Creek, Seminole, and Cherokee. **(RI.3.2)**
- ✓ Locate where the Creek, Seminole, and Cherokee live. **(RI.3.1)**
- ✓ Identify and describe other forms of Native American art. **(RI.3.7)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *confederacy*, *council*, *clan*, and *symbol*. **(RI.3.4)**

### What Teachers Need to Know

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For background information, download the CKHG Online Resource “About After the Ancestral Pueblo and Mound Builders”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Materials Needed

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Activity Pages



AP 4.1  
AP 6.1

- Display and individual student copies of Native American Culture Regions (AP 4.1)
- Individual student copies of Art from Natural Resources (AP 6.1); colored pencils or crayons
- Use this link to download the CKHG Online Resources for this unit, where images and information about Native American art may be found:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

### Core Vocabulary (Student Reader page numbers listed below)

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**confederacy, n.** a loosely organized group of states or tribes **(38)**

*Example:* The Native Americans formed a confederacy to prevent future conflict and war.

# The Eastern Woodlands

**The Big Question:** What was the purpose of the Haudenosaunee Confederacy?

## Primary Focus Objectives

- ✓ Describe the culture and ways of life of the peoples of the Eastern Woodlands. **(RI.3.2)**
- ✓ Explain why the Haudenosaunee Confederacy was important. **(RI.3.1)**
- ✓ Identify reasons for the struggle between Native Americans and European Americans. **(RI.3.7)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *landscape, stalk, wigwam, longhouse, ebb, sachem, and peace pipe*. **(RI.3.4)**

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About the Eastern Woodlands”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Pages



AP 1.1  
AP 4.1

- World Map (AP 1.1)
- Display and individual student copies of Native American Culture Regions (AP 4.1)
- Use this link to download the CKHG Online Resources for this unit, where the Infinity of Nations Culture Quest may be found:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Core Vocabulary (Student Reader page numbers listed below)

**landscape, n.** the physical features of an area **(44)**

*Example:* The landscape of the Eastern Woodlands features many trees.

*Variation(s):* landscapes

**stalk, n.** the thick stem of a plant **(46)**

*Example:* The small girl pulled the ears from the stalk of corn.

*Variation(s):* stalks

## CHAPTER 1

# Visiting Canada

**The Big Question:** What are some similarities and differences between Canada and the United States today?

## Primary Focus Objectives

- ✓ Use a map to locate Canada in relation to the United States. (RI.3.7)
- ✓ Describe the organization of Canada into provinces and territories. (RI.3.1)
- ✓ Locate Toronto and Ontario on a map. (RI.3.7)
- ✓ Compare present-day Canada to the United States. (RI.3.2)
- ✓ Understand the meaning of the following domain-specific vocabulary: *province, territory, colony, culture, head of state, republic, prime minister, multicultural, indigenous, symbol*; and of the phrase “elected representative.” (RI.3.4)

## What Teachers Need to Know

For background information, download the CKHG Online Resource “About Canada”:

[www.coreknowledge.org/ckhg-online-resources](http://www.coreknowledge.org/ckhg-online-resources)

## Materials Needed

Activity Pages



AP 1.1

AP 1.2

- Display and individual student copies of World Map (AP 1.1)
- Board space or chart paper for Compare and Contrast activity
- Individual student copies of Planning a Trip to Canada (AP 1.2)

## Core Vocabulary (Student Reader page numbers listed below)

**province, n.** a political area or region in Canada, similar to a state (2)

*Example:* The country of Canada is divided into a number of provinces.

*Variation(s):* provinces

**territory, n.** an area of land governed in part by the Canadian parliament (4)

*Example:* Canada rules over three large territories in northern Canada.

*Variation(s):* territories

# The Story of Canada

**The Big Question:** What kinds of things do Canada and the United States share in their histories?

## Primary Focus Objectives

- ✓ Describe the cultures of Canada’s indigenous peoples. **(RI.3.2)**
- ✓ Summarize the history of Europeans in Canada, including its French/British heritage and that the language spoken in Quebec is French. **(RI.3.2)**
- ✓ Locate the St. Lawrence River, Montreal, and Quebec City on a map. **(RI.3.7)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *settle, Arctic, Inuit, resource, igloo, totem pole, tepee, and longhouse*. **(RI.3.4)**

## Materials Needed

Activity Pages



AP 1.1  
AP 2.1

- Display and individual student copies of World Map (AP 1.1)
- Venn diagram from Compare and Contrast activity in Chapter 1
- Individual student copies of The Story of Canada (AP 2.1)

## Core Vocabulary (Student Reader page numbers listed below)

**settle, v.** to move to a new place and make it home **(10)**

*Example:* Many people came from Europe and Asia to settle in Canada.

*Variation(s):* settles, settled, settlers (noun)

**Arctic, n.** the region of the Arctic Ocean, including the land in and around it **(10)**

*Example:* The Arctic is one of the coldest places on the planet.

*Variation:* Arctic (adjective)

**Inuit, n.** a group of indigenous people from northern Canada, formerly known as Eskimo **(10)**

*Example:* The Inuit have lived in Canada for many thousands of years.

**resource, n.** something that people can use **(10)**

*Example:* Rivers are an important resource that provide water, fish, and transportation routes.

*Variation:* resources

# Places in Canada

**The Big Question:** How might people take advantage of the resources found in the places where they live?

## Primary Focus Objectives

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- ✓ Describe the different regions in Canada. **(RI.3.2)**
- ✓ Explain the significance of the Rocky Mountains, Hudson Bay, the St. Lawrence River, and the Yukon River. **(RI.3.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *climate*, *capital*, *industry*, *lumber*, and *caribou*. **(RI.3.4)**

## Materials Needed

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- Venn diagram from Compare and Contrast activity in Chapters 1 and 2
- Internet access for Visiting Canada Virtual Field Trip

## Core Vocabulary (Student Reader page numbers listed below)

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**climate, n.** the usual weather of a place, including its temperature and precipitation **(18)**

*Example:* The climate of northwestern Canada includes a lot of rain and snow during the winter.

*Variation(s):* climates

**capital, n.** the home of a country's government and a main city in a country **(18)**

*Example:* Many people move to the capital when they want to work for the government.

*Variation(s):* capitals

**industry, n.** a business that manufactures a product or provides a service **(22)**

*Example:* Canada has a strong oil industry because of the large oil deposits found beneath its soil.

*Variation(s):* industries

## Core Knowledge

*To advance excellence and equity in education for all children*

Knowledge-based schooling puts the emphasis of early education on teaching and learning an enabling core of broadly shared knowledge—enabling because it builds strong foundations for later learning and opens doors to effective participation and mutual understanding in the wider society. Such knowledge is possessed by successful adults and taken for granted by literate writers and speakers. It’s the broad and diverse knowledge that makes responsible citizenship possible.

Educational excellence and equity require a coherent, cumulative, knowledge-based curriculum. This basic principle inspired the Core Knowledge Foundation to undertake the long process of research and consensus-building that led to the development of the Core Knowledge Sequence, the blueprint for knowledge-based schooling.

- create literate citizens able to contribute to a democratic society
- empower each child to achieve his or her greatest academic potential
- shrink the excellence gap between the academic achievement of American students and that of their international peers from high-performing countries
- shrink the fairness gap between the academic achievement of American students living in poverty and that of their economically advantaged peers.

### Knowledge-Based Schooling

Knowledge-based schooling opens doors to enabling knowledge, which in turn opens doors to productive and responsible citizenship. To support knowledge-based schooling, the Core Knowledge Foundation has since its founding worked to identify and make available the knowledge and skills essential to the development of literacy and responsible citizenship. The results of this ongoing effort are presented in the Core Knowledge Sequence, the blueprint for a coherent, cumulative, and content-specific curriculum in preschool through eighth grade.

### Content & Skills

In the early years, in order to distinguish ourselves from other education reform efforts and approaches that focused on process over subject-specific content, we identified the Core Knowledge Sequence as a “set of content guidelines.” Core Knowledge and the Core Knowledge Foundation became synonymous with content among knowledgeable educators. However, as sometimes happens, some began to portray Core Knowledge as an “either/or” proposition, i.e., if you were using Core Knowledge, you were focused only on content, not skills. Of course, nothing could be further from the truth. As successful Core Knowledge schools have always known, Core Knowledge is more accurately described as a “both/and” proposition: effective Core Knowledge teachers know that both content and skills are essential; they embed the teaching of critical skills within the content they share with their students. The skill objectives are most effectively targeted when they are anchored to the content in the context of a domain of knowledge. To that end, you will notice that we are now explicitly referring to the Core Knowledge Sequence as “Content and Skill Guidelines” for preschool–grade 8.

### State Standards

Standards typically describe what students should be able to do, but not what students should know. The content-rich, thoughtfully designed Core Knowledge Sequence complements state standards by offering a concrete curriculum to guide teaching and learning. Instead of spending hours researching and planning what to teach, teachers are freed to think more creatively about how to teach. They know what children have learned in previous grades and what they will need in succeeding grades. They can avoid useless repetition. They are less likely to be confronted by big gaps in what students have learned.

## Illinois Social Science Learning Standards

*To produce Illinois graduates who are civically engaged, socially responsible, culturally aware, and financially literate.*

Students should be able to utilize the inquiry process to analyze foundational knowledge, develop questions (about the past, present, and future), apply tools to research, weigh evidence, and develop conclusions. In an effort to inspire positive change for their classroom, school, and/or community (both present and future), civically minded students will then process this information to formulate viewpoints that will impact decisions made regarding real-world problems. These skills should be applied while teaching and learning the disciplinary concepts for a deeper understanding that allows students to take ownership of their learning.

### Developing Questions and Planning Inquiries

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.IS.2.3-5. Create supporting questions to help answer essential questions in an inquiry.

SS.IS.3.3-5. Determine sources representing multiple points of view that will assist in answering essential questions.

### Evaluating Sources and Using Evidence

SS.IS.4.3-5. Gather relevant information and distinguish among fact and opinion to determine credibility of multiple sources.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

### Communicating Conclusions and Taking Informed Action

SS.IS.6.3-5. Construct and critique arguments and explanations using reasoning, examples, and details from multiple sources.

SS.IS.7.3-5. Identify a range of local problems and some ways in which people are trying to address these problems.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

### Illinois Elementary Social Science Learning Standards

*The Elementary Social Science Learning Standards build on the ever expanding social awareness of students at each grade level through themes that enable teachers to use an interdisciplinary approach and compare the student’s own social world with that of others past and present, near and far. Students at the elementary level vary greatly in their cognitive abilities from one grade level to the next. Therefore, the standards are specific to each individual grade level. This allows students to cultivate their knowledge, problem-solving abilities, and critical thinking skills to engage in the inquiry process at that specific level. Students will apply these skills to civics, history, economics, and geography at each grade level.*

### K–5 Disciplinary Concepts:

The disciplinary concepts are divided among the major disciplines of social science: civics, history, economics, and geography. These standards should be taught in conjunction with the inquiry skills. Because these standards are grade specific, teachers should focus on standards at their grade level. The theme and narrative for that grade level should be used as a framework when addressing standards and making comparisons to others in the past, present, and around the world. These standards are not content specific, allowing districts to determine the precise historical events and periods of time that should be studied at certain grade levels. It also will be important for districts to ensure the state mandates, listed below in each disciplinary content area, are taught.

### Illinois Middle Grade Social Science Learning Standards

The middle grades provide a bridge between the elementary and high school experiences. Reflecting the unique nature of adolescents and the schools in which they learn, the structure of the middle grade social science standards is unique. Unlike the elementary and high school standards, the middle grade standards do not assign particular content to each grade level. Rather, these standards focus on the developmental need of middle grade students: to cultivate the critical thinking skills used by social scientists through the inquiry process. The disciplinary concepts of civics, economics, geography, and history are integrated within the curriculum.

### Inquiry Skills:

Inquiry skills are used by students to construct essential questions, construct supporting questions, and determine helpful sources to conduct inquiry and take informed action while applying disciplinary concepts. Inquiry skills are methods and dispositions that students need to develop in order to be equipped to meet the challenges of college, career, and civic life.

### Civic Standards: Understand Political Systems, With an Emphasis on the United States

#### *Civic and Political Institutions*

SS.CV.1.3. Describe ways in which interactions among families, workplaces, voluntary organizations, and government benefit communities.

SS.CV.2.3. Explain how groups of people make rules to create responsibilities and protect freedoms.

#### *Participation and Deliberation: Applying Civic Virtues and Democratic Principles*

SS.CV.3.3. Compare procedures for making decisions in the classroom, school, and community.

#### *Processes, Rules, and Laws*

SS.CV.4.3. Describe how people have tried to improve their communities over time.

### Discipline: Economics Standards

#### *Economic Decision Making*

SS.EC.1.3. Compare the goods and services that people in the local community produce and those that are produced in other communities.

#### *Exchange and Markets*

SS.EC.2.3. Generate examples of the goods and services that governments provide.

#### *Financial Literacy*

SS.EC.FL.1.3. Describe the role of banks and other financial institutions in an economy.

SS.EC.FL.2.3. Explain that when people borrow, they receive something of value now and agree to repay the lender over time.

### Discipline: Geography Standards

#### *Geographic Representations*

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

#### *Human-Environment Interaction*

SS.G.2.3. Compare how people modify and adapt to the environment and culture in our community to other places.

*Global Interconnections*

SS.G.3.3. Show how the consumption of products connects people to distant places.

**Discipline: History Standards**

*Change, Continuity, and Context*

SS.H.1.3. Create and use a chronological sequence of events.

*Perspectives*

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

*Historical Sources and Evidence*

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

**Sample alignment with IL Social Science Learning Standards**

**Grade 3**

**Unit: The Earliest Americans**

*Core idea: America was populated by many different native peoples thousands of years before the arrival of European explorers*

Timeline: concept of time and how it is recorded

Students take turns reading out loud

Big questions

Core vocabulary

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

*CC RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.*

**Beringia: The Land Bridge**

What was Beringia?

Understand that nomadic hunters may have made their way from Asia to North America by crossing a land bridge located in the Bering Strait.

Describe how Ice Age people of Beringia lived.

Understand the meaning of the following domain-specific vocabulary: Ice Age, land bridge, ice sheet, hunter-gatherers, herd, mammoth, musk ox, and spear.

World Map

Beringia: The Land Bridge historical fictional narrative

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

*CC RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.*

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.IS.4.3-5. Gather relevant information and distinguish among fact and opinion to determine credibility of multiple sources.

SS.IS.7.3-5. Identify a range of local problems and some ways in which people are trying to address these problems.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

SS.G.2.3. Compare how people modify and adapt to the environment and culture in our community to other places.

Virtual Field Trip to the Ice Age

**America's First Settlers**

How did the ability to grow food change the way people lived?

Explain how America's first settlers divided into many groups and spread throughout North and South America.

Explain the impact of farming on how people lived.

Understand the meaning of the following domain-specific vocabulary: river valley, mastodon, and soil.

World Map

Timeline: concept of time and how it is recorded

Encourage students, as they read, to look for ways the ability to grow food changed how people lived.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.EC.1.3. Compare the goods and services that people in the local community produce and those that are produced in other communities.

SS.G.2.3. Compare how people modify and adapt to the environment and culture in our community to other places.

*CC RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.*

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.IS.2.3-5. Create supporting questions to help answer essential questions in an inquiry.

SS.IS.4.3-5. Gather relevant information and distinguish among fact and opinion to determine credibility of multiple sources.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.G.3.3. Show how the consumption of products connects people to distant places.

SS.EC.1.3. Compare the goods and services that people in the local community produce and those that are produced in other communities.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

Early farming

"Turn & Talk"

**People of the Far North**

What were the differences between life in the summer and life in the winter for the Inuit?

Identify the Inuit people, and explain how they came to North America.

Describe the way of life of the Inuit.

Understand the meaning of the following domain-specific vocabulary: northern lights, ancestor, caribou, hide, igloo, and fuel.

World Map

Timeline: concept of time and how it is recorded

"Turn & Talk"

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.EC.1.3. Compare the goods and services that people in the local community produce and those that are produced in other communities.

*CC RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.*

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

## Ancestral Pueblo and Mound Builders

How would you compare the settlements built by the Ancestral Pueblo to those built by the Mound Builders?

Describe the accomplishments and way of life of the Ancestral Pueblo and the Mound Builders.  
Compare the Ancestral Pueblo and the Mound Builders.

Understand the meaning of the following domain-specific vocabulary: cliff dweller, canyon, Pueblo, adobe, mineral, and mound.

World Map

Timeline: concept of time and how it is recorded

What happened to the Ancestral Pueblo

Mound Builders

Ancestral Pueblo Virtual Village

"Turn & Talk"

## After the Ancestral Pueblo

What are some of the reasons why some Native American groups moved from place to place?

5 mesa, game

Describe the ways of life of the Hopi, Zuni, Navajo, Apache, and Comanche.

Locate the Native American nations of the Southwest.

Identify and describe Native American artwork including Hopi kachina dolls and Navajo blankets, rugs, and sand paintings.

Understand the meaning of the following domain-specific vocabulary: mesa and game.

World Map

Timeline: concept of time and how it is recorded

"The Pueblo"

"Turn & Talk"

Native Artwork of the Southwest/Design a Navajo Rug

## After the Mound Builders

What were the key characteristics of the Creek, Seminole, and Cherokee Nations?

Describe the ways of life of the Creek, Seminole, and Cherokee.

Locate where the Creek, Seminole, and Cherokee live.

Identify and describe other forms of Native American art.

Understand the meaning of the following domain-specific vocabulary: confederacy, council, clan, and symbol.

World Map

Timeline: concept of time and how it is recorded

Review: The Big Question

The Creek Nation: confederacy, council

The Seminole

"Turn & Talk"

Native American Art

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.IS.2.3-5. Create supporting questions to help answer essential questions in an inquiry.

SS.IS.3.3-5. Determine sources representing multiple points of view that will assist in answering essential questions.

*CC RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.*

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.G.2.3. Compare how people modify and adapt to the environment and culture in our community to other places.

SS.G.3.3. Show how the consumption of products connects people to distant places.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

SS.CV.1.3. Describe ways in which interactions among families, workplaces, voluntary organizations, and government benefit communities.

SS.EC.1.3. Compare the goods and services that people in the local community produce and those that are produced in other communities.

SS.G.2.3. Compare how people modify and adapt to the environment and culture in our community to other places.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

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SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.G.3.3. Show how the consumption of products connects people to distant places.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

*CC RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.*

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.IS.4.3-5. Gather relevant information and distinguish among fact and opinion to determine credibility of multiple sources.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.IS.6.3-5. Construct and critique arguments and explanations using reasoning, examples, and details from multiple sources.

SS.CV.3.3. Compare procedures for making decisions in the classroom, school, and community.

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

SS.H.3.3. Identify artifacts and documents as either primary or secondary sources of historical data from which historical accounts are constructed.



## The Eastern Woodlands

What was the purpose of the Haudenosaunee Confederacy?

Describe the culture and ways of life of the peoples of the Eastern Woodlands.

Explain why the Haudenosaunee Confederacy was important.

Identify reasons for the struggle between Native Americans and European Americans.

Understand the meaning of the following domain-specific vocabulary: landscape, stalk, wigwam, longhouse, ebb, sachem, and peace pipe.

World Map

Timeline: concept of time and how it is recorded

The Haudenosaunee Confederacy

"Turn & Talk"

Student presentation(oral comparing two Native American groups

Complete Notes Table

Oral presentation

### Standards not included:

SS.H.2.3. Describe how significant people, events, and developments have shaped their own community and region.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

CC.RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.

SS.G.1.3. Locate major landforms and bodies of water on a map or other representation.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.H.1.3. Create and use a chronological sequence of events.

SS.CV.1.3. Describe ways in which interactions among families, workplaces, voluntary organizations, and government benefit communities.

SS.CV.2.3. Explain how groups of people make rules to create responsibilities and protect freedoms.

SS.CV.4.3. Describe how people have tried to improve their communities over time.

SS.IS.8.3.3-5. Use listening, consensus-building, and voting procedures to decide on and take action in their classroom and school.

SS.IS.4.3-5. Gather relevant information and distinguish among fact and opinion to determine credibility of multiple sources.

SS.IS.5.3-5. Develop claims using evidence from multiple sources to answer essential questions.

SS.IS.1.3-5. Develop essential questions and explain the importance of the questions to self and others.

SS.EC.2.3 Generate examples of the goods and services that governments provide.

SS.EC.FL.1.3. Describe the role of banks and other financial institutions in an economy.

SS.EC.FL.2.3. Explain that when people borrow, they receive something of value now and agree to repay the lender over time.

## Core Knowledge Science Program—Domain Map

### Science Content

- Five senses and the associated body parts:

Sight: eyes

Hearing: ears

Smell: nose

Taste: tongue

Touch: skin

- Basic needs and taking care of your body:

Healthy foods and water

Air

Shelter and clothing

Rest

Cleanliness

Exercise

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***K-LS1-1***. Use observations to describe **patterns of what plants and animals (including humans) need to survive**.

***Rationale:***

This first unit of the CK Science program lays the early foundation for the developing understanding of what animals (including humans) need to survive ([DCI LS1.C](#)). This will be expanded in later Kindergarten units (Unit 2 *Animals & Their Needs* and Unit 3 *Plants & Farms*) as well as across the grades (e.g., Grade 1 Unit 4 *Living Things & Their Environments* and Grade 3 Unit 3 *Human Body: Cells & The Digestive System*).

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

|   |   |
|---|---|
| <p><b>1-PS4-4.</b> Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p>   | <p><b>Rationale:</b></p> <p>This unit directly contributes to a student’s developing understanding of <a href="#">DCI PS4.C</a>, which is the core idea central to this Grade 1 standard. PS4.C begins its progression with the idea that “people use their senses to learn about the world around them. Their eyes detect light, their ears detect sound, and they can feel vibrations by touch.” (<i>Framework</i>, page 137) This core idea will be further supported by the later study of telescopes (Grade 3 Unit 3 <i>Light &amp; Optics</i> as well as Grade 3 Unit 5 <i>Astronomy</i>) and the study of telephones (Grade 3 Unit 4 <i>Sound</i> and the biography of Alexander Graham Bell).</p> |
| <p><b>1-LS1-1.</b> Use materials to design a solution to a human problem by mimicking how plants and/or <b>animals use their external parts to help them survive, grow, and meet their needs.</b></p> | <p><b>Rationale:</b></p> <p>As modeled by this Grade 1 standard, this Kindergarten unit “bundles” the disciplinary core ideas of <a href="#">LS1.A</a> (Structure &amp; Function) and <a href="#">LS1.D</a> (Information Processing) to foster early learning about the cross-cutting concept of <a href="#">structure and function</a>. This concept will be extended in Grade 1 through Unit 4 <i>Living Things &amp; Their Environments</i> when there is also the opportunity to connect and apply these core ideas while addressing <a href="#">ESS3.A</a> (Natural Resources) which addresses the question, “<i>How do humans depend on Earth’s resources?</i>”</p>                                 |

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

#### POTENTIAL CCSS Math Connections

**K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (*K-LS1-1*)

**MP.5** Use appropriate tools strategically. (*1-PS4-4*)

**POTENTIAL** CCSS ELA Connections

**W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (*K-LS1-1*)

**POTENTIAL** Cross-Curricular Connections

**ELA:** Poetry—“Time to Rise,” “Early to Bed,” and “My Nose”

Sayings & Phrases—“Look before you leap” and “Better safe than sorry”

**Visual Arts:** Elements of Art—Pablo Picasso, *Le Gourmet*

Looking and Talking about Works of Art—Mary Cassatt, *The Child’s Bath*

**Music:** Songs—“The Hokey Pokey”

**Prior Knowledge**

**The Core Knowledge Preschool Sequence**

Scientific Reasoning and the Physical World

**Goal:** *Demonstrate an initial understanding of the living world*

- Humans learn through their senses
- Human bodies are made up of many different parts
- Humans need to do certain things to grow and stay healthy
- Humans need to protect themselves in different ways

**CKLA Preschool**

- State that the five senses are sight, hearing, smell, taste, and touch
- State how each of the five senses helps us to experience the world
- Name human beings’ three basic needs: water, food, and shelter
- State that a body can heal itself when it is hurt or sick
- State that people stay healthy by exercising, resting, eating good foods, and staying clean

**CKLA Kindergarten Objectives**

*The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students’ background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

**Domain Anthology, The Five Senses**

- Identify and describe the five senses: sight, hearing, smell, taste, and touch
- Identify the body parts associated with the five senses
- Provide simple explanations about how the eyes, ears, nose, tongue, and skin work
- Describe how the five senses help people learn about their world

- Describe some ways people take care of their bodies
- Describe some ways the five senses help protect people from harm
- Describe the experiences and challenges of someone who is blind or deaf
- Explain the contributions of Ray Charles
- Explain the contributions of Helen Keller

### What Students Will Learn in Future Grades

#### Core Knowledge Sequence

##### Grade 1 *The Human Body*

- Body Systems: Skeletal, Muscular, Digestive, Circulatory, and Nervous Systems
- Germs, Diseases, and Preventing Illness

##### Grade 2 *The Human Body*

- Cells, Digestive and Excretory Systems, and a Healthy Diet

##### Grade 3 *The Human Body*

- The Muscular, Skeletal, and Nervous Systems
- How the Eyes and Ears Work

##### Grade 4 *The Human Body*

- The Circulatory and Respiratory Systems

##### Grade 5 *The Human Body*

- Changes in Human Adolescence

### Core Vocabulary

The following list contains the Core Vocabulary words suggested for purposeful integration across this Kindergarten unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

#### Basic Needs of Your Body

**needs**, survive, alive, health(y), food, **shelter**, clothing, **air**, water, protect, **rest**, sleep, tired, exhausted, grow, age, temperature, huddle

#### Sight

eye, **vision**, light, color, brightness, shade, look, seeing, sight, iris, pigment, **pupil**, eyeball, eyelid, lens, blink, squint, **blindness**, focus, image, visual, visible, **reflection**, **glasses**, eye doctor, contact lens, nearsighted, farsighted

#### Taking Care of Your Body

**exercise**, pulse, sports, sweat, **cleanliness**, bath(e), hygiene, disease, germs, harm, organ, **nutrients**, fat, protein, carbohydrate, **senses**, brain, **system**, habits, aware, sometimes, often

#### Hearing

**sound**, ear, hearing, vibrate, movement, **eardrum**, inner/outer ear, invisible, **waves**, echo, volume, soft, quietly, whisper, loud, shout, yell, voice, vocal, deafness, hearing aid, **audio**, radio, stereo, speaker, microphone

|  |   |
|--|---|
| <p><b>Smell</b></p> <p><i>nostrils, nose, <b>scent</b>, smell, <b>inhale</b>, odor, sweet, sour, smoky, perfume, sniff, <b>stench</b>, stink, receptors, molecules, mucus, nasal</i></p> <p><b>Touch</b></p> <p><i>skin, touch, feel, <b>sensation</b>, sensitive, nerves, grab, <b>texture</b>, rough, smooth, soft, bumpy, furry, slippery, sharp, dull, hot, cold, grab, push, rub, <b>numb</b></i></p> | <p><b>Taste</b></p> <p><i><b>taste buds, flavor, sweet, salty, sour, bitter, flavorful, <b>bland</b>, digest, tongue, mouth, throat, palate, saliva, teeth, <b>swallow</b>, pucker, congested, chemical, reaction, prefer</b></i></p> |
|--|---|

**Potential Misconceptions**

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

|  |   |
|--|---|
| <p><b>Misconception: “There is a ‘map’ of taste buds on the tongue. For example, taste buds for sweet tastes are on the tip of the tongue and bitter taste buds are at the back of the tongue.”</b></p> <p>Specialized taste buds for all tastes are actually spread all throughout the tongue, not necessarily grouped together. And, contrary to popular belief, taste buds are not just on the tongue—they also line the soft palate at the roof of the mouth, as well as the epiglottis, the flap in your throat that blocks food from entering the windpipe.</p> <p><b>Misconception: “There are only four tastes: sweet, salty, sour, and bitter.”</b></p> <p>Scientists agree that there is at least one additional taste called “umami” for the savory taste of glutamate, a substance common in Japanese foods as well as in meats such as bacon. Umami can be translated from Japanese as “good taste” or “deliciousness.”</p> | <p><b>Misconception: “Humans have only five senses.”</b></p> <p>Scientists define anywhere between nine to twenty different human senses depending on the scope of their investigation. Examples beyond the five senses we typically think of include the sensation of thirst; the sensations of pain and itchiness (which actually involve two different mechanisms than those involved in the generalized senses of touch and pressure); the sensation of color (cone cells in the eye send color information to the brain); and the sensation of brightness (rod cells in the eye send information to the brain about shade/brightness).</p> <p><b>Key points for instruction:</b></p> <p>It is important for teachers to remember that the nervous system—the brain in particular—plays an important part in all human senses. For example, the eye captures light from your surroundings, but it is the brain that processes this information. The importance of the brain relative to sight can be highlighted using optical illusions.</p> |
|--|---|

During research studies, fourth-graders have been shown to understand that the brain helps the body, but they do not always realize that body parts help the brain (Johnson & Wellman, 1982).

### Potential Objectives for this Kindergarten Unit

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the assessment should take place.*

#### **Beginning**

- Distinguish between needs and wants
- Identify the basic needs of human beings
- Identify habits that keep our bodies healthy (K-LS1-1)
- Describe how we can keep our bodies safe from germs
- Describe how we can take care of our bodies

#### **Middle**

- Identify which organs allow us to see, hear, smell, taste, and touch
- Describe how the sense of sight helps us learn
- Describe how the pupil changes in bright light compared to little light
- Describe how the sense of hearing helps us learn
- Describe how the sense of hearing keeps us safe from harm (1-LS1-1)
- Identify devices that support people with limited vision and/or hearing
- Describe how the sense of smell helps us learn
- Classify scents as sweet or sour

#### **End**

- Describe how the sense of taste helps us learn
- Predict another sense that can also help us taste
- Classify foods as tasting sweet, salty, bitter, or sour
- Describe how the sense of touch helps us learn
- Describe how the sense of touch keeps us safe from harm (1-LS1-1)

### Potential Big Guiding Questions

#### Essential Questions:

- How can we keep our bodies healthy?
- How do our senses help us meet our needs? (1-LS1-1)
- How do our senses help us learn about the world around us? (1-PS4-4)

#### RE: Basic Needs

- What do you need to survive?
- What is the difference between a need and a want?

#### RE: Taking Care of Your Body

- What activities do people in your area do to stay healthy?
- What food do you eat that is healthy/unhealthy?
- Why is cleanliness important?
- How do germs spread?

#### RE: The Senses

- Which parts of your body help you to (see, hear, smell, taste, or touch)?
- How does your sense of (sight, hearing, smell, taste, or touch) help to keep you safe from harm?
- How does the pupil change in bright light versus low light?
- What tools can be used to help people with limited vision and/or hearing?
- How do your senses work together (e.g., taste and smell)?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective or NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted to indicate the approximate point in time the assessment would take place.*

#### **Example #1: (Beginning of Unit 1; also see Potential Activities Example #3)**

**{Evaluates Student Mastery of Objective:** Describe how we can keep our bodies safe from germs}

**Advance Preparation:** This assessment requires a bag of glitter and several sheets of paper towels, wipes, and bowls for groups of 2–3 students.

**Task Assessment:** Sprinkle small amounts of glitter on students’ hands and on their tables. This glitter represents “germs.” When provided with paper towels, wipes, and a bowl of soapy water, students will work in groups of two or three to problem-solve how to remove the “germs” on their table and on their hands. As students share their solutions, ask them to describe how quickly they were able to remove the “germs” (e.g., “Were you able to wipe away all of the glitter from the table with one swipe?”) and what that tells them about protecting their bodies from real germs.



**Example #2: (Middle of Unit 1)**

**{Evaluates Student Mastery of Objective:** Identify which organs allow us to see, hear, smell, taste, and touch}

**Advance Preparation:** Create the assessment handout by dividing a piece of paper into two columns. On the left side of the paper, moving from top to bottom, draw (or insert) images of a nose, eye, ear, tongue, and hand. On the right side, draw (or insert) images of objects that one could smell, see, hear, taste, or touch.

**Task Assessment:** When provided with a two-column matching activity—described above—students will match each organ to the object which corresponds with each sense.

**Potential Activities & Procedures**

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

**Example #1: (Beginning of Unit 1)**

**{Contributes to the Objective:** Identify the basic needs of human beings}

**Activity:** As students examine the needs of human beings (Unit 1), animals (Unit 2), and plants (Unit 3), keep a chart of your students’ ideas and examples for each group/unit. These charts can be used as evidence during later discussions. During Units 2 and 3, ask your students to identify patterns across the three domains providing appropriate support and scaffolding (e.g., all animals—including humans—eat food, some animals eat plants, some animals eat other animals, some animals eat both plants and other animals, etc.). Students will use the patterns culled from this “data” to describe what human beings, animals, and plants need to survive. (K-LS1-1)

**Example #2: (Beginning of Unit 1)**

**{Contributes to the Objective:** Describe habits that keep our bodies healthy}

**T—Which of our basic needs (healthy food, water, shelter, air, clothing, rest, cleanliness, and exercise) are related to our health?** Direct students to take a few moments to think, then pair students up to discuss their ideas with a partner.

After students have had sixty to ninety seconds to talk, ask several pairs to share their ideas with the group. As the partners debrief, encourage all students to think about the responses and whether or not they agree, including their rationales (e.g., eating healthy foods keeps our bodies healthy).

**T—If many of our basic needs are connected to keeping our bodies healthy, what does that tell us?** Students should draw the conclusion that health is very important since it is closely connected to

almost every basic need. If student responses are off base, use targeted questions to guide them to this idea.

**T—Today we are going to focus on how we can keep our bodies healthy. What do you do to stay healthy?** As students share ideas, record the responses on the board or chart paper.

After a few minutes, draw students' attention to the board or chart paper, and model how to group similar ideas together (e.g., "You shared: Brushing my teeth, flossing, and washing my hands. How are we keeping our bodies healthy through these routines or habits? → These are examples of how we keep our bodies clean."). The goal is to identify examples for the following categories: eating healthy foods, exercising, getting rest, and keeping our bodies clean.

**T—Let's take a closer look at each of these healthy habits, starting with exercising.**

[Note: The activity below could be completed in the classroom or outdoors if your students need more space.]

Model how to locate your pulse on your wrist and/or neck. Ask students to place their finger on their pulse. Explain that this allows them to feel their blood circulating through their bodies.

**T—I want you feel your pulse for thirty seconds. When your time is up, I will ask you to tell me what you noticed.** When time is called, ask students questions that draw their attention to the pace of their pulse. Explain that they took their pulse in a resting state.

Explain to students that you will give them some time to "exercise" so they can compare their pulse after exercise to their pulse in its resting state. Ask the students to stand up and run in place (or around the playground) for one to two minutes.

**T—Now I want you to sit down and feel your pulse for thirty seconds.** After thirty seconds, ask the students to stop and tell you what they noticed compared to the first time they took their pulse. Students should identify that their pulse was faster after exercising.

**T—Why do you think that happened?** Through questioning, guide students with making the connection between the heart pumping faster and how exercise keeps the heart and body healthy.

### **Example #3: (Beginning of Unit 1)**

**{Contributes to the Objective:** Describe how we can keep our bodies safe from germs}

**Advance Preparation:** At the start of this activity, students should be sitting on the carpet. If not, make sure there is at least one empty table/desk in the room, asking students who normally sit there to move. Make sure that you place several pencils, crayons, or other writing tools; a bag of glitter; and paper on this table/desk.

Hold up the bag of glitter.

**T—We have been learning about how to keep our bodies healthy. Today we are going to learn about how germs can spread and how we can protect our bodies from germs.**

**We are going to pretend that this glitter represents germs.** (Ask students to share some of the different ways germs can spread.) **Using this glitter, I am going to demonstrate how germs can spread by coughing.**

Walk up to the table/desk where no one is sitting. Pretending to cough, blow glitter on the table. Direct students to stand up and form a circle around the table.

**T—What just happened here?** (Possible student responses may include, “Your cough spread germs onto the table.”) Through questioning, guide students to see that the “germs” not only spread onto the table, but also onto all objects sitting on the table.

Ask students to return to their seats (including the children who sit at the table with the glitter).

**T—I want you to make a prediction about what is going to happen, if [names of students sitting at the table] work at their table.** Encourage students to pause for several seconds to think, and then instruct them to tell a partner what they think will happen.

**T—Using pencils/crayons and paper, write/draw your prediction.** During this activity, you may prompt students, who are sitting at different tables, to ask to borrow writing instruments and paper from the table with the glitter.

After students have finished and have had an opportunity share their predictions, ask the students who are sitting at the table with the glitter to share where they see the glitter now. Through questioning, guide these students to discover that the “germs” are covering a larger area of the table, and also cover parts of their hands and paper. If students from different tables borrowed writing instruments or paper with “germs,” the “germs” are now at their tables as well.

**T—All of these germs spread through just one cough. How can we keep our bodies safe from germs?** Through questioning, continue the discussion to meet the lesson objective.

### Websites & Media

**The Society for Neuroscience—BrainFacts.org:**

<http://www.brainfacts.org/sensing-thinking-behaving/senses-and-perception/>

Enhance your knowledge about the brain and your senses with interesting facts, stories, and vibrant visuals from this website. Questions such as, “[Why does stepping on a Lego hurt so bad?](#)” just might kick-start your thinking about how you can engage your students to think about sensation.

**Optical Illusions:** <http://www.sciencekids.co.nz/pictures/illusions.html>

Illusions can amaze your students as they wonder how an illusion works and why their brains “trick” them into seeing something that their eyes don’t actually see.

**Guide Dogs:** <http://www.slideshare.net/guestb1e4b60/freedom-guide-dogs-for-kids>

This student-friendly presentation can help you to introduce how guide dogs assist those with visual impairments.

**Unite for Sight—Annie’s Website for Kids:** <http://www.uniteforsight.org/kids/about.php>

This organization supports efforts around the world to teach children about the eye and to provide vision screenings. Unite for Sight’s mascot, Annie, can help you to plan kid-friendly lessons about eyeglasses, eye safety, and more.

**PBS Kids—Arthur’s Sign Design:** <http://pbskids.org/arthur/print/signdesign/index.html>

This website can help you to introduce sign language to your students. Using the “Practice Signing” section, Arthur will help you and your students practice signing your names, ask questions, or even make statements using sign language.

**PBS Kids—Sid the Science Kid’s “I Sense” Game:** <http://pbskids.org/sid/isense.html>

You might use this interactive game with your students to apply their knowledge of the senses. Select the common object that matches Sid’s prompts about smell, touch, sight, and more.

### Supplemental Trade Books

- Eating Well, by Liz Gogerly (Crabtree Publishing Company, 2009) ISBN 0778741176
- Eyes (Human Body), by Robert James (Rourke Publishing, 1995) ISBN 1571031049
- First Delights: A Book About the Five Senses, by Tasha Tudor (Price, Stern, Sloan, 1988) ISBN 0448093278
- Fuel the Body: Eating Well, by Amanda Doering Tourville (Picture Window Books, 2008) ISBN 1404848142
- Get Up and Go!, by Nancy Carlson (Penguin Group, 2008) ISBN 0142410640
- Go Wash Up: Keeping Clean, by Amanda Doering Tourville (Coughlan Publishing, 2008) ISBN 1404848088
- Happy Birthday Moon, by Frank Asch (Aladdin, 2000) ISBN 0689835442
- Hearing Things, by Allan Fowler (Children's Press, Inc., 1991) ISBN 0516449095
- It Looked Like Spilt Milk, by Charles Shaw (HarperTrophy, 1988) ISBN 0064431592
- Look! A Book About Sight, by Dana Meachen Rau (Picture Window Books, 2005) ISBN 1404810196
- Mice Squeak, We Speak, by Arnold L. Shapiro and illustrated by Tomie DePaola (Putnam Juvenile, 1997) ISBN 0399232028
- My Amazing Body: A First Look at Health and Fitness, by Pat Thomas (Barron's Educational Series, Inc., 2002) ISBN 0764121197
- My Five Senses, by Alike (HarperTrophy, 1989) ISBN 006445083X
- My Senses Help Me, by Bobbie Kalman (Crabtree Publishing Company, 2010) ISBN 9780778794721
- No One Saw: Ordinary Things Through the Eyes of an Artist, by Bob Raczka (Millbrook Press, 2001) ISBN 0761323708
- Oh, the Things You Can Do that Are Good for You!: All About Staying Healthy, by Tish Rabe (Random House, Inc. 2001) ISBN 0375810986

- Polar Bear Polar Bear, by Bill Martin Jr. (Henry Holt and Co., 1992) ISBN 0805023461
- Seven Blind Mice, by Ed Young (Puffin Books, 2002) ISBN 0698118952
- Shhhh . . . A Book About Hearing, by Dana Meachen Rau (Picture Window Books, 2005) ISBN 1404810188
- Sleep Is for Everyone (Let's-Read-and-Find-out Science Book), by Paul Showers (HarperCollins Publishers, 1997) ISBN 0064451410
- The Five Senses (It's Science), by Sally Hewitt (BT Bound, 2003) ISBN 061337343X
- The Five Senses: Hearing, by Maria Ruis (Barron's Educational Series, Inc., 1985) ISBN 0812035631
- The Five Senses: Sight, by Maria Ruis (Barron's Educational Series, Inc., 1985) ISBN 081203564X
- The Five Senses: Smell, by Maria Ruis (Barron's Educational Series, Inc., 1985) ISBN 0812035658
- The Five Senses: Taste, by Maria Ruis (Barron's Educational Series, Inc., 1985) ISBN 0812035666
- The Five Senses: Touch, by Maria Ruis (Barron's Educational Series, Inc., 1985) ISBN 0812035674
- The Listening Walk, by Paul Showers and Alike (HarperTrophy, February 1993) ISBN 0064433226
- Touching and Feeling, by Katie Dicker (Cherrytree Books, 2009) ISBN 1842345788
- What is Taste?, by Jennifer Boothroyd (Lightning Bolt Books, 2010) ISBN 0761350170
- You Can't Smell a Flower with Your Ear! All About Your 5 Senses, by Joanna Cole (Grosset & Dunlap, 1994) ISBN 0448404699
- You Can't Taste a Pickle with Your Ear: A Book About Your 5 Senses, by Harriet Ziefert and illustrated by Amanda Haley (Handprint Books, 2002) ISBN 1929766688
- Your Five Senses, by Melvin and Gilda Berger (Scholastic, 2003) ISBN 0439566886
- Helen Keller, by Pamela Walker (Scholastic, 2001) ISBN 9780516235882
- Sensing Light and Sound, by Jennifer Boothroyd (Lerner Publishing Group, 2014) ISBN 9781467745062

Core Knowledge Science Program—Domain Map

Science Content

- Animals, including humans, need food, water, air, and space to live and grow
- Animals get food from eating plants or other living things
- Offspring are very much (but not exactly) like their parents
- Most animal babies need to be fed and cared for by their parents; human babies are especially in need of care when young
- Pets have special needs and must be cared for by their owners
- A biography of Jane Goodall

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.***

***Rationale:***

In this second unit of Kindergarten there is a particular opportunity to look for patterns, by comparing the needs of human beings studied in Unit 1 with those of other animals explored in this unit.

This unit explicitly engages students with the concept of what animals need to grow and survive ([DCI LS1.C](#)), but it also examines [LS1.B](#) parents' behaviors that help offspring to survive (see 1-LS1-2 below). K-LS1-1 will be further developed across Unit 3 *Plants & Farms*, and it may be reviewed/ applied during Unit 5 *Taking Care of the Earth* as well.

***K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.***

This standard and its core ideas (DCIs [ESS2.E](#) and [ESS3.C](#)) will be addressed as students explore the idea that animals get food from eating plants or other living things, and thus change the environment when doing so (LS2.A and LS2.B). These ideas will also be expanded in Unit 3 *Plants & Farms* when students learn about farming and in Unit 5 *Taking Care of the Earth* when the concept of conservation is introduced.

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

|   |   |
|---|---|
| <p><b><i>K-ESS3-1.</i></b> Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p> | <p>This standard, and its core idea (<a href="#">DCI ESS3.A</a>) regarding natural resources, will be explicitly developed during Unit 5 <i>Taking Care of the Earth</i>, as well as in Grade 1 Unit 4 <i>Living Things &amp; Their Environments</i>. This Kindergarten unit focuses on the needs of animals (<a href="#">LS1.C</a>) first, and students will have the opportunity to apply and expand their knowledge of specific needs when making the connection to <a href="#">ESS3.A</a> later in this grade and in Grade 1.</p> |
| <p><b><i>1-LS1-2.</i></b> Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</p>                          | <p>The core idea central to this standard, <a href="#">DCI LS1.B</a>, is introduced in this unit, focusing on the concept that “most animal babies need to be fed and cared for by their parents; human babies are especially in need of care when young.” This idea will be reviewed and applied again in Grade 1 through Unit 1 <i>Human Body Systems &amp; Preventing Illness</i> (e.g., taking care of your body and getting vaccinations) and through Grade 1 Unit 4 <i>Living Things &amp; Their Environments</i>.</p>          |

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

**POTENTIAL** CCSS Math Connections

- [MP.2](#) Reason abstractly and quantitatively. (K-ESS2-1 and K-ESS3-1)
- [MP.4](#) Model with mathematics. (K-ESS2-1 and K-ESS3-1)
- [K.CC](#) Counting and Cardinality (K-ESS3-1)
- [K.CC.A](#) Know number names and the count sequence. (K-ESS2-1)
- [K.MD.A.1](#) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K-LS1-1)

K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

#### POTENTIAL CCSS ELA Connections

R.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)

W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2)

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1 & K-LS1-1)

SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)

#### POTENTIAL Cross-Curricular Connections

**ELA:** Fiction—Stories such as “The Ugly Duckling”

Sayings & Phrases—“The early bird gets the worm,” and “A dog is a man’s best friend.”

Poetry—Mother Goose Rhymes and Other Traditional Poems, such as “Mary Had a Little Lamb” and “Ladybug, Ladybug”

**Visual Arts:** Sculpture—Alexander Calder, *Lobster Trap and Fish Tail* (This connection may only be meaningful for students if teachers explicitly use lobsters as an example during instruction.)

**Music:** Songs—such as “Eensy, Weensy Spider,” “Here Is the Beehive,” “Oh Where, Oh Where Has My Little Dog Gone?,” and “Five Little Ducks That I Once Knew”

## Prior Knowledge

### Core Knowledge Preschool Sequence

Scientific Reasoning and the Physical World

*Goal: Demonstrate an initial understanding of the living world*

- Animals are living things
- Animals live in many kinds of homes



### **CKLA Preschool**

- Identify at least ten animals by name
- State that humans are animals
- Identify three body parts that belong to animals that are not human (e.g., beak, trunk, claw, etc.)
- Identify three body parts that humans and some animals have in common (e.g., eyes, ears, legs, hands, etc.)
- Describe how animals use specific body parts (e.g., an elephant uses its trunk to get water)
- State that animals' three basic needs are water, food, and shelter
- Describe at least two ways animals protect themselves from weather
- Describe at least two ways animals protect themselves from other animals
- Pair pictures of mother and baby animals that look similar to each other
- Sort pictures of birds, fish, and insects into piles based on the animal group to which they belong
- State defining characteristics of birds, fish, insects, and mammals
- Identify plants and animals that live in ocean, woodland, desert, and farm habitats

### **Core Knowledge Science** (Previously taught Kindergarten units)

#### **Unit 1 *The Human Body: Basic Needs & Five Senses***

- Identify the basic needs of human beings
- Describe how we can take care of our bodies

## **CKLA Kindergarten Objectives**

*The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

#### **Domain Anthology, *Plants***

- Explain that the plant makes its food in its leaves

#### **Domain Anthology, *Farms***

- Identify needs of farm animals: food, water, and space to live and grow
- Describe how farm animal babies need to be fed and cared for by their parents or people

## **What Students Will Learn in Future Grades**

### **Core Knowledge Sequence**

#### **Grade 1 *Living Things and Their Environments***

- Habitats; ocean and undersea life; and special classifications of animals

#### **Grade 2 *Cycles in Nature***

- Life cycles

**Grade 3**

**Introduction to Classification of Animals**

- Scientists classify animals according to the characteristics they share.
- Different classes of vertebrates
- Basic characteristics of fish, amphibians, reptiles, birds, and mammals

**Ecology**

- Habitats, “balance of nature,” food web, and ecosystems
- Man-made threats to the environment and protecting the environment

**Grade 5**

**Classifying Living Things**

- Kingdom, phylum, class, order, family, genus, species, and (variety)
- Homo sapiens
- Taxonomists
- Different classes of vertebrates

**Cells: Structures and Processes**

- Structure of cells (both plant and animal)
- Plant cells, unlike animal cells, have cell walls and chloroplasts
- Cells are shaped differently in order to perform different functions
- Organization of cells into tissues, organs, and systems

**Life Cycles and Reproduction**

- Life cycles
- All living things reproduce themselves
- Sexual reproduction in animals

**Core Vocabulary**

The following list contains the core vocabulary words suggested for purposeful integration across this Kindergarten unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

**Basic Needs of Animals**

animal, human, needs, food, space, shelter, water, air, **basic**, **survive**, alive, health(y), protect, safe, rest, sleep, tired, grow, **nutrients**

**Pets**

**care**, pet, wild, tame, feed, **tend**, maintain, walk, dog, cat, rabbit, hamster, guinea pig, bird, fish, snake, reptile, **habits**, bathe, hygiene, disease, aware, sometimes, often

### Characteristics and Behaviors

**trait**, characteristic, structure, feature, body, part, **system**, leg, arm, wing, tail, feather, beak, scales, trunk, claws, paws, feet, fur, fins, flippers, gills, hoof, horn, shell, fleece, inherit, **behavior**, sniff, burrow, swim, hibernate, leap, graze, peck, perch, fly, herbivore, carnivore, omnivore, mammal, **classify**

### Taking Care of Offspring

**offspring**, litter, birth, hatch, dependent, **responsible**, action, family, pack, herd, flock, parent, father, mother, child, baby, foal, sibling, brother, sister, cry, cheep, **raise**, collect, edible, nest, egg, feeding, cuddle, fawn, pouch

### Habitats

habitat, **environment**, **ecosystem**, community, region, desert, ocean, **woodland**, woods, forest, **meadow**, prairie, underground, island, cave, bat, condor, camel, lizard, sand, cactus, water, coast, tadpole, sea lion, otter, beaver, lobster, crab, eagle, seagull, dolphin, penguin, whale, duck, seal, forest, insect, deer, bear, panda, lion, elk, moose, cow, horse, goat, squirrel, raccoon, spider, adapt, **climate**, weather, **temperature**, huddle, dry, wet, danger, harm

*Also consider how you might apply the vocabulary learned and used during Unit 1 The Human Body: Basic Needs & Five Senses.*

## Potential Misconceptions

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

### Misconception: “People are not animals.”

Often, students use “animals” as a term to distinguish between people and animals. This understanding may be reinforced by common language use (e.g., signs that read “no animals on freeway” and statements referring to pets, such as “time to feed the animals”).

Students (and teachers) may also use a restricted meaning for the word “animal” (Mintzes et al., 1991). For example, most people list only vertebrates as animals, although invertebrate species make up a large majority of all animals. Elementary- and middle-school students often use such criteria as number of legs, body covering, and habitat to decide whether things are animals.

### Key points for instruction:

Elementary students may not understand that food is a scarce resource in ecosystems, thinking that organisms can change their food at will, according to the availability of particular sources (Leach et. al., 1992). This is an important idea for teachers to keep in mind when foreshadowing future units (e.g., Unit 5 *Taking Care of the Earth*).

The connection between the needs of humans and the needs of all animals is important to emphasize, particularly in light of the misconception noted at left. Students have also been shown to classify organisms based on the scope and sequence of their previous instruction; for example, some students classify insects as non-animals because they learned about insects during a separate unit.

**Potential Objectives for This Kindergarten Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Classify living things and nonliving things
- Compare and contrast humans and other animals
- Identify at least three basic needs of animals (K-LS1-1)
- Describe how animals use specific body parts to meet their needs
- Describe at least two ways that animals protect themselves from other animals
- Distinguish between wild animals and pets
- Describe how owners keep their pets safe and healthy
- Describe how animals’ basic needs are similar to/different from human beings’ basic needs (K-LS1-1)

**Middle**

- Identify two ways that animals are born
- Pair pictures of a parent and baby animals that look similar to each other
- Identify similarities and differences in the traits of parents and their young
- Describe two ways that baby animals let their parents know that they need something
- Describe how animals care for their young offspring
- Describe similar (and different) ways animals and humans take care of their young offspring (1-LS1-2)

**End**

- Identify how scientists can learn about animal characteristics and behaviors
- State two defining characteristics of mammals
- Describe at least one difference between fish and mammals
- State two defining characteristics of birds
- Describe at least one difference between birds and insects
- Categorize pictures of birds, fish, insects, and mammals, sorting them into piles based on the group to which they belong
- Describe animals’ characteristics or behaviors that allow them to survive in the wild
- Describe the meaning of the term “habitat”
- Identify animals that can live in ocean, woodland, desert, and savanna habitats (K-ESS3-1)
- Describe how animals can change their habitats in order to meet their needs (K-ESS2-2)
- Categorize pictures of animals into groups (herbivores, carnivores, or omnivores) based on examples of food that they eat

### Potential Big Guiding Questions

#### Essential Questions:

- How are your needs similar to the needs of all animals?
- How do pets' needs differ from those of other animals?
- Why do animals live where they do?
- How do animals change their environments to meet their needs?

#### RE: Basic Needs of Animals

- How are you similar to an elephant?
- Do all animals sleep?
- How do animals protect themselves from other animals?

#### RE: Pets

- What is the difference between a pet and a wild animal?
- Why do some pets need a bath and others do not?

#### RE: Animal Characteristics and Behaviors

- What are the differences among a mammal, bird, fish, and an insect?
- How do animals use their environments to meet their needs?

#### RE: Habitats

- Are there mammals that live in the ocean?
- Do similar animals live in the desert *and* the forest?

#### RE: Taking Care of Offspring

- Why do babies cry?
- How do animal parents take care of their young?
- How are your parents similar to (and different from) the parents of a baby bird?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing ( "beginning," "middle," or "end") is noted in order to indicate approximately when the assessment should take place.*

#### Example #1: (End of Unit 2)

**{Evaluates Student Mastery of Objective:** Describe how animals can change their habitats in order to meet their needs}

**Advance Preparation:** Create the assessment handout by dividing a paper in half (top to bottom). At the top of the page illustrate or find images depicting a deer eating leaves from a bush; a lion lying in the shade under a tree; a squirrel digging a hole in the dirt to bury nuts; a rabbit hiding in tall blades of grass; and a beaver building a dam. Leave the bottom half of the paper blank.

**Task Assessment:** Provide students with the assessment handout, crayons, and a pencil. Point to each image and ask students what the animal is doing. Ask students to circle an example of an animal changing its environment to meet its need. (Clarify that **not** every picture depicts an animal making a change to its habitat.) In the space at the bottom of the page, ask student to draw a representation (the evidence they saw in the picture) of how the environment was changed by that animal. Rotate around the room, asking students to describe their illustration and transcribe their ideas on the bottom of the handout. Students, who are ready and able, can write words/phrases that describe their drawings. (K-ESS2-2)

**Example #2: (End of Unit 2)**

{Evaluates Student Mastery of Objective: Identify animals that can live in ocean, woodland, desert, and savanna habitats}

**Advance Preparation:**

- Habitat Image Cards—draw or find images of the ocean, woodland, desert, and savanna habitats.
- Sentence strips with questions that students could ask to learn about the animal’s needs. (Answers to the questions would provide information needed to determine the the type of habitat an animal could live in.) Examples may include, “What food does the animal eat?” “Can the animal survive in very hot or very cold weather?” “How does the animal breathe?” “What does the animal use for shelter?” Next to each sentence, draw a visual clue—most Kindergarten students will not be able to read the text on the sentence strips independently.
- Blank sentence strips.
- Four to five Animal Image Cards—draw or find images of animals that live in either the ocean, woodland, desert, or savanna habitats. These animals may have been discussed during previous instruction, but these animals should not include a the lion, deer, whale, or camel.
- Create the assessment handout by dividing a paper into two columns. In the first column, draw or insert pictures of the animals reviewed through the assessment. These images should match the animal image cards. In the second column, draw or insert images of the four habitats. These should be copies of the same drawings or images depicted on the habitat image cards.
- **Note:** This assessment would be best administered to small groups of students, one group at a time. Consider meaningful tasks that remaining students could complete independently (and/or in small group if there is another adult in the classroom).
- **Note:** Prior to this assessment, students learned about the climate and natural resources of each of these habitats.

**Task Assessment:** Display images.

**T- I am going to show you pictures of some animals, and you will need to figure out where each animal lives. To help determine the animal’s habitat, you can ask me questions. But, it is important that you ask questions that will give you information about whether or not the animal could adapt to living in the ocean, woodland, desert, or savanna.**

**T- Here are examples of questions you may want to ask.** Hold up each sentence strip and review the questions. Ask students if there are other questions they feel would be important to ask. Add these to the blank sentence strips.

Holding up the first image, guide students with asking questions (referring back to the questions on the sentence strips) about the animal's characteristics and needs.

**T- Are you ready to use the information you learned about this animal to determine if it lives in the ocean, woodland, desert, or savanna?** Provide each student with the assessment handout.

**T- On your paper, draw a line connecting this animal to where it lives.**

Repeat this procedure with the remaining animals.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

#### **Example #1: (Beginning of Unit 2)**

**{Contributes to the Objective:** Identify at least three basic needs of animals}

**Activity:** As students examine the needs of human beings (Unit 1), animals (Unit 2), and plants (Unit 3), keep a chart of your students' ideas and examples for each group. This chart can be used as evidence during discussions of animals—including humans—during this unit. Ask your students to identify patterns across the first two domains providing appropriate support and scaffolding (e.g., all animals—including humans—eat food, some animals eat plants, some animals eat other animals, some animals eat both plants and other animals, etc.). Students will use the patterns culled from this “data” to describe what human beings, animals, and plants need to survive. [K-LS1-1]

#### **Example #2: (End of Unit 2)**

**{Contributes to the Objective:** Identify how scientists can learn about animal characteristics and behaviors}

#### **Advance Preparation:**

- You will need a copy of the [Core Knowledge Text Resource](#), *Biography of Jane Goodall* pages 266–268.
- Each student (or pair of students) will need an observation journal. The journals can be composition books or teacher-created handouts stapled together.
- The second component of this activity is the opportunity for students to observe animal behavior. Therefore, you will need to determine what students will be observing (e.g., a class pet, animals at the zoo through a webcam or video clips, etc.) as well as when they will make these observations during the day.

- If students observe an animal in small groups or pairs, you may wish to allow them to complete this task during natural transitions during your day (e.g., as arrival or after they are prepared to dismiss for the day) and/or as part of one of your learning centers.
- If you prefer students make observations as a whole class, then it would probably be best to have students view several short clips of prerecorded video of the same animal during the next science lesson. Pause between clips for students to discuss what they saw with a partner and record their observations in their journals.

**Activity:** Explain to students that they will be learning about a famous scientist named Jane Goodall, who has studied chimpanzees for many years.

**T- I am going to read you a story about Dr. Goodall. As you listen to the story, I want you to think about what she did in order to learn about chimpanzees and how scientists learn about the characteristics of animals and their behaviors.**

Read aloud *The Biography of Jane Goodall*. Pause periodically to ask students to share **what** Dr. Goodall learned about chimpanzees and **how** she learned that information.

**T- How did Jane Goodall learn about chimpanzees?** (Student responses may include, “She looked at them,” or “She watched them.”)

**T- When scientists carefully watch something, they call it an observation.**

Ask students if they think observations can be made in very short instances or during longer periods of time (and what they remembered from the story that makes them think that).

**T- In order to find patterns in chimpanzee behaviors, Dr. Goodall had to watch them very closely and for a long time. Over the next several days, we are going to act like scientists and observe animal behavior.**

Introduce students to their observation journals. During each of the next one to two days, students will spend approximately five minutes observing a class pet or animals through a webcam, such as on the following website: <https://nationalzoo.si.edu/Animals/WebCams/>. (If students watch a zoo webcam, it is important that they observe the same animal over the course of several days.) It may be best to build in time throughout the day (e.g., morning arrival, choice/center time, and during dismissal), so that small groups of students can take turns observing and recording what they see.

(During the following lesson, students will share their data, and you can model how students can look at the collected data to find patterns about the animal’s behavior.)

### **Example #3: (End of Unit 2)**

{**Contributes to the Objective:** Describe animals’ characteristics or behaviors that allow them to survive in the wild}

#### **Advance Preparation:**

- Large images (that students can view from the carpet or their seats) of a lion in the savanna, a camel in the desert, a deer in the woodlands, and a whale in the ocean.



- One animal card per student. Each animal card displays an image of a lion, deer, camel, or whale and should be small enough that each child can hold the card up with one hand.

**Activity:** Display images of a lion in the savanna, a deer in the woodlands, a camel in the desert, and a whale in the ocean. Holding up the image of each animal, ask students if they can recall (from the prior day's lesson) the name of the animal and some of its characteristics and/or behaviors. As students share, records their ideas on the board or chart paper.

Pass out cards, each of which has a picture of a lion, deer, camel, or whale. Each student will have an image of one animal.

**T- I am going to share a characteristic or a behavior. If it describes your animal, hold up your card.**

As students engage in the activity, make statements or ask questions that call their attention to characteristics/behaviors that are unique to a specific animal or that are shared among several/all animals.

**T- I want you to think about this question in your heads for a minute: what do these characteristics and behaviors (share a few examples) allow these animals to do? (Pause for thirty to sixty seconds.) Now turn to your partner and tell him or her what these special characteristics and behaviors let each of these animals do. (Allow students to talk for at least thirty seconds.) Now I would like you to raise your hand and share what you and your partner discussed.**

The goal is for students to arrive at the idea that these characteristics and/or behaviors enable animals to survive in their environment. If students are off-topic, acknowledge their responses, but ask targeted questions that guide them to connect these characteristics to survival.

**T- Each of these animals has unique characteristics or behaves in a certain way in order to survive in its environment...**

### Websites & Media

**PBS Learning Video—What do animals eat? (approximately 1 minute)**

<http://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.eat/what-do-animals-eat/>

This short compilation includes footage of a variety of animals as they eat. You might ask your students to first name all of the animals they recognize in the video and then, after watching the clip again, to think about and share as many examples of animal food as they possibly can.

**PBS Learning Video—Beavers (approximately 5 minutes)**

<http://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.beaver/beavers/>

The beaver is an example of an animal that changes its environment to meet its needs—"nature's own engineer." This video focuses on the beaver's ability to transform its environment to suit its needs.

**Virtual Tour of the Smithsonian's National Zoo:** <https://nationalzoo.si.edu/Animals/WebCams/>

Treat your students to a virtual field trip to the National Zoo. Smithsonian's National Zoo offers live webcams of their Asian elephant community, lion cubs, and giant pandas.

**San Diego Zoo Exhibit—Polar Bears:** <http://animals.sandiegozoo.org/animals/polar-bear>

The San Diego Zoo offers live footage, captivating photos, and fun facts of/about polar bears. For example, did you know that polar bears can swim at speeds of up to six miles an hour? Have your students learn more about polar bears, as well as other species, by taking a virtual tour of the San Diego Zoo.

**Habitats & Animals:** <http://animals.sandiegozoo.org/habitats>

Select a habitat and scroll through images of animals that live there. This may help your students to begin learning about the diversity of life on earth and can foreshadow their continued study of habitats in Grade 1.

**Do all creatures sleep?** <http://animals.howstuffworks.com/animal-facts/all-creatures-sleep.htm>

If you are curious to learn more about this *seemingly* simple question, then this article is for you.

**Supplemental Trade Books**

- Animal Homes, by Sally Hewitt ISBN 439228743
- Animal Parade, by Jakki Wood ISBN 9781845071660
- Cactus Hotel, by Brenda Z. Guiberson, Megan Lloyd ISBN 0805029605
- Deserts, by Neil Morris ISBN 0865058393
- In the Forest, by Maurice Pledger ISBN 1571453210
- Leaping Frogs, by Melvin Berger ISBN 156784023X
- Learning About Animals, by Evan-Moor Educational Publishers ISBN 9781557997715
- Learning about Animals, by Lo Ellen Moore ISBN 1557990972
- Life in the Desert, by Melvin Berger ISBN 9781567842173
- Life in the Sea, by Melvin Berger ISBN 9781567840131
- Life on the African Savannah, by Melvin Berger ISBN 9781567842142
- Our Animal Friends at Maple Hill Farm, by Alice Provensen, Martin Provensen ISBN 9780689844997
- There's a Rumble in the Jungle, by Giles Andreae, David Wojtowycz ISBN 9781589253674
- What Animal Am I? An Animal Guessing Game, by Iza Trapani ISBN 9780439318235
- Mice Squeak, We Speak, by Arnold L. Shapiro and illustrated by Tomie DePaola (Putnam Juvenile, 1997) ISBN 0399232028

- Polar Bear Polar Bear, What Do You Hear?, by Bill Martin Jr. (Henry Holt and Co., 1992) ISBN 0805023461
- Sleep Is for Everyone (Let's-Read-and-Find-out Science Book), by Paul Showers (HarperCollins Publishers, 1997) ISBN 0064451410
- Chicks & Chickens, by Gail Gibbons (Holiday House, 2003) ISBN 0823419398
- Pigs, by Gail Gibbons (Holiday House, 2000) ISBN 0823415546
- Sheep, by Rachael Bell (Heinemann, 2003) ISBN 1403440409

*Recommended by the National Science Teachers Association:*

- Next Time You See a Seashell, by Emily Morgan (NSTA Press) ISBN 9781936959150
- Next Time You See a Firefly, by Emily Morgan (NSTA Press) ISBN 9781936959181
- Next Time You See a Pill Bug, by Emily Morgan (NSTA Press) ISBN 9781936959174
- Next Time You See a Spiderweb by Emily Morgan (NSTA Press) ISBN 9781938946349
- What Does an Animal Eat? I Wonder Why, by Lawrence Lowery (NSTA Press) ISBN 9781936959464
- What Can an Animal Do? I Wonder Why, by Lawrence Lowery (NSTA Press) ISBN 9781936959457
- Looking for Animals: I Wonder Why, by Lawrence Lowery (NSTA Press) ISBN 9781941316276
- Animals Two by Two: I Wonder Why, by Lawrence Lowery (NSTA Press) ISBN 9781941316283

Core Knowledge Science Program - Domain Map

Science Content

- What plants need to grow: sufficient warmth, light, and water, air, and space (land)
- Basic parts of common plants: seed, root, stem, branch, leaf, flower
- Plants do not eat food, but make much of what they need themselves
- Flowers and seeds: seeds as food for plants and animals (for example, rice, nuts, wheat, corn)
- Two kinds of plants: deciduous and evergreen
- Farming:
  - How some food comes from farms as crops
  - How farmers must take special care to protect their crops from weeds and pests
  - How crops are harvested, kept fresh, packaged, and transported for people to buy and consume
- A biography of George Washington Carver

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.***

***Rationale:***

This unit will explicitly engage students with the **concept of what plants need to grow and survive** (DCI [LS1.C](#)). This standard is further developed across the *Animals & Their Needs* and *The Human Body: Basic Needs & Five Senses* units of this grade. This core idea may be reviewed/applied during the *Taking Care of the Earth* unit as well.

***K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.***

As with K-LS1-1, the *Plants & Farms* unit will work with other units to meet or exceed this standard. In this unit, students will gain an early understanding that **plants do not eat food, but use light and gather water and minerals from their environment to make what they need to survive.**

This concept of changing the environment (which also supports the progression of DCIs [LS2.A](#) and [LS2.B](#)) will be explored while studying how **farmers protect crops from weeds and pests, which change their environment in undesired ways.**

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

***K-ESS3-1. Use a model to represent the relationship between **the needs of different plants and animals (including humans) and the places they live.*****

***Rationale:***

The study of farms and farming contributes directly to the progression of [DCI ESS3.A](#) (Natural Resources), the core idea central to this Kindergarten standard. This unit also foreshadows learning in Grade 1 Unit 4 *Living Things & Their Environments*, which directly supports **K-ESS3-1** as it is written.

**Important Note:** As written, this standard does not fully meet the [early progression for ESS3.A](#), which is a core idea not addressed again until Grade 4 in the NGSS. This unit provides an excellent opportunity to meet this early progression. For example, studying farms and farming can help students to understand that humans do not necessarily live in environments that provide for all of their needs. Building a model of **how crops are harvested, kept fresh, packaged and transported for people to buy and consume** will address this concept while also engaging students in modeling human's impact on the Earth and the concept of system models.

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. These skills, works of poetry, art, music, and more may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

#### POTENTIAL CCSS Math Connections

[MP.2](#) Reason abstractly and quantitatively. (K-ESS2-1)

[MP.4](#) Model with mathematics. (K-ESS2-1)

[K.CC.A](#) Know number names and the count sequence. (K-ESS2-1)

[K.MD.A.1](#) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)

[K.MD.A.2](#) Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-LS1-1)

K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

**POTENTIAL** CCSS ELA Connections

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)

W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2)

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1 & K-LS1-1)

**POTENTIAL** Cross-Curricular Connections

**Potential Links:**

**ELA:** Poetry—“Mary, Mary, Quite Contrary,” “Roses are Red”

Fiction—American Legends and Tall Tales, Johnny Appleseed

Sayings and Phrases—“April showers bring May flowers” and “Great oaks from little acorns grow”

**Music:** Songs— “Oats, Peas, Beans, and Barley Grow”

## Prior Knowledge

### **Core Knowledge Preschool Sequence**

Scientific Reasoning and the Physical World

**Goal:** *Demonstrate an initial understanding of the living world*

- Plants are living things

### **CKLA Preschool**

- State that plants are alive
- Name the four parts of a plant (i.e., roots, stem, leaves, flowers)
- State the function of the four parts of a plant (i.e., roots soak up water; stem holds the plant up; leaves collect sunlight and air; flowers make seeds)
- Describe how a sunflower grows (i.e., seed in ground; small root grows down; seedling comes up out of ground; flower grows from stem)
- Name plants’ four basic needs: sunlight, water, air, nutrients (from soil)
- State three ways that plants are important to humans and animals (i.e., they provide oxygen, food, and shelter)
- Name five foods that come from plants (e.g., apple, blueberry, banana, carrot, lettuce, etc.)

**Core Knowledge Science** (Previously taught Kindergarten units)

**Unit 1 Human Body: Basic Needs & Five Senses**

- Distinguish between needs and wants
- Identify the basic needs of human beings

**Unit 2 Animals and Their Needs**

- Identify at least three basic needs of animals

### CKLA Kindergarten Objectives

*The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

**Domain Anthology, *Plants***

- Explain that different kinds of plants grow in different environments
- Explain that plants are living things
- Describe what plants need to live and grow: food, water, air, and light
- Identify the root, stem, branch, leaf, flower, fruit, and seed of a plant
- Explain that roots anchor the plant and take in water and nutrients
- Explain that stems support the plant and carry water and nutrients to the various parts of the plant
- Explain that the plant makes its food in its leaves
- Explain that seeds are the beginnings of new plants
- Explain the basic life cycle of plants
- Explain that some plants produce fruit to hold seeds
- Compare and contrast the fruits and seeds of different plants
- Identify the parts of specific plants that are eaten by people
- Identify the petals on a flower
- Describe how bees collect nectar and pollen
- Describe how bees make and use honey
- Describe the important role bees play in plant pollination
- Demonstrate familiarity with the tall tale “Johnny Appleseed”
- Compare and contrast deciduous and evergreen trees
- Explain that deciduous trees are a type of plant that loses its leaves in the fall and becomes dormant in the winter
- Explain that evergreen trees are a type of plant that stays green all year and does not become dormant in the winter
- Identify how deciduous trees are important to people and nature
- Identify things that plants provide to people: oxygen, food, and important products
- Describe the life and scientific achievements of George Washington Carver

**Domain Anthology, *Farms***

- Explain what a farm is
- Describe a farmer's and a shepherd's jobs
- Identify animals found on farms and the sounds animals make
- Identify buildings found on farms
- Identify machines and tools of farming
- Demonstrate familiarity with the songs “Bingo” and “Old MacDonald Had a Farm”
- Identify needs of farm animals: food, water, and space to live and grow
- Describe how farm animal babies need to be fed and cared for by their parents or people
- Explain why farmers raise animals
- Identify foods that come from animals
- Explain why farmers grow crops
- Identify crops as plants grown on farms for use as food
- Describe how some food comes from farms as crops
- Sequence the seasonal rhythm of planting, growing, and harvesting
- Describe how farmers protect their crops from drought, and pests
- Sequence events of crops from farm to store (planted, harvested, transported, packaged)

**What Students Will Learn in Future Grades****Core Knowledge Sequence****Grade 1*****Living Things and Their Environments***

- Habitats, Ocean and Undersea Life, and Special Classifications of Animals

**Grade 2*****Cycles in Nature***

- Seasonal Cycles (seasons and life processes), Life Cycles (reproduction in plants)

**Grade 3*****Ecology***

- Habitats, “balance of nature,” food web, and ecosystems
- Man-made threats to the environment and protecting the environment

**Grade 5*****Classifying Living Things***

- Kingdoms, Phylum, Class, Order, Family, Genus, Species, and (Variety)
- Homo sapiens
- Taxonomists
- Different classes of vertebrates



**Grade 5 continued**

**Cells: Structures and Processes**

- Structure of cells (both plant and animal)
- Plant cells, unlike animal cells, have cell walls and chloroplasts
- Cells are shaped differently in order to perform different functions
- Organization of cells into tissues, organs, and systems

**Plant Structures and Processes**

- Vascular and nonvascular plants
- Photosynthesis
- Asexual reproduction, vegetative reproduction, sexual reproduction
- Process of seed and fruit production
- Seed germination and plant growth

**Core Vocabulary**

The following list contains the core vocabulary words suggested for purposeful integration across this Kindergarten unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

**Parts of a Plant**

plant, living, root, stem, seed, spore, leaf, flower, sprout, bulb, **bloom**, bud, cutting, blossom, shoot, needles, cone, trunk, branch, limb, fruit, pit, core, blade, petal, **pollen**, nectar, fiber, tissue, cells, slip, function, transport, anchor, absorb, germinate, **life cycle**, sapling, seedling, acorn, trait, characteristic, structure, part, piece, botany, **botanist**

**Kinds of Plants**

**deciduous**, **evergreen**, tree, [types of trees], bush, shrub, herb, flowering, fern, conifer, weed, fruiting, vegetable, [types of fruits & vegetables], sunflower, rose, daisy, tulip, dandelion, **classification**

**Basic Needs of Plants**

important, water, air, carbon dioxide, oxygen, light, sunlight, shade, space, **soil**, ground, land, nutrients, **minerals**, nourish, energy, photosynthesis, survival, conditions, **environment**, habitat, temperature, warmth, cold, weather, dormant, climate, rain, **rainfall**, temperate, desert, forest, ocean, river

**Farms**

farmer, **resource**, natural, grow, crop, [examples of crops], fertilizer, irrigate, protect, tend, pests, pesticide, unwanted, undesired, garden, orchard, greenhouse, barn, fresh, spoil, **sow**, **harvest**, collect, **edible**, produce, graze, herd, flock, shepherd, livestock, [examples of livestock], **package**, seal, transport, ship, consume, purchase, market, store, grocery

### Potential Misconceptions

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

**Misconception: “Plants breathe by inhaling carbon dioxide and exhaling oxygen.”**

Plants do not breathe. Air enters the plant through the stomata (pores) in their leaves. Both carbon dioxide and oxygen are used for different processes in plants. Photosynthesis requires carbon dioxide, while respiration (the breakdown of sugars for use in the cells) requires oxygen. While plants do release oxygen, it is a byproduct of photosynthesis and is not released through breathing.

**Misconception: “Plants get their energy from the soil through roots.”**

Chloroplasts in the plant absorb the sun’s energy for use in photosynthesis. Water and minerals are taken in through the roots.

**Misconception: “Leaves take in water.”**

Water is taken in through the roots.

**Misconception: “Plants take in all substances they need to grow through their roots.”**

Plants take in air through their leaves. Chloroplasts in the plant absorb the sun’s energy for use in photosynthesis. Water and minerals are taken in through the roots.

**Key points for instruction:**

Students may not consider trees to be plants. Researchers have found that when classifying animals, elementary students tend to define/use mutually exclusive groups rather than subsets of a larger group (e.g., stating that “humans are different than animals” when a person is both human and an animal.) Similar logic may be applied when studying plants. Listen carefully for student examples as they describe their thinking and use a variety of examples when helping students to define what is and isn’t a plant.

Young students may not distinguish between food, as they know it, and misunderstand that the “food” made by plants is not exactly the same as the food that they eat.

Teachers should be sure not to overgeneralize the basic parts of all plants, for example when talking about seeds and flowers. Be sure to include in your examples plants such as ferns, which have neither seeds nor flowers.

When connecting this unit to previous learning (e.g., when reviewing Unit 1 *The Human Body*), keep into consideration that some students use movement and reactions to sensation as criteria for being alive, so students may not recognize plants as being living things (Driver et al, 1994). Plants do have senses and exhibit reactions to their environments. For example, **phototropism** is the phenomenon of plants growing or bending towards a source of light to meet their needs.

### Potential Objectives for this Kindergarten Unit

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

#### Beginning

- Describe how plants are used in our everyday lives
- Identify the basic parts of a plant
- Describe how plants get and store energy
- Describe how plants grow
- Sequence the life cycle of a plant
- Identify characteristics of deciduous and evergreen plants
- Classify plants as deciduous or evergreen

#### Middle

- Identify what plants need in order to live and grow
- Compare and contrast plants’ basic needs (to survive) to the needs of animals and human beings
- Infer how plants may change their habitat in order to meet their needs
- Describe how George Washington Carver used plants to meet people’s needs

#### End

- Identify the needs of crops on a farm
- Describe how farmers use natural resources to take care of their crops
- Identify common livestock that can live on a farm
- Describe how plants help livestock meet their needs
- Describe the process of harvesting crops to people purchasing produce to consume
- Identify ways in which we can keep food fresh

### Potential Big Guiding Questions

#### Essential Questions:

- **How are plants useful?**
- **How do farmers meet the needs of the crops they grow and the animals they raise?**

RE: Examining the parts of a plant

- How does this part of the plant [pointing to the roots, stem, branch, leaf, flower] look? (size, shape, color)
- What does this part of the plant [pointing to the stem, flower] smell like?
- How do you think this part of the plant [pointing to the stem, branch, leaf, flower] helps it grow?
- Why do you think the roots are spread out beneath the soil?
- How could soil help plants?

## RE: Plants and Plant Life

- How are plants' needs different from the needs of human beings and animals? In what ways are they the same?
- In what ways are insects helpful to plants? In what ways are they harmful?
- How do plants affect their environment and other living things (human beings and animals)?

## RE: Farms

- How do the needs of animals on a farm differ from wild animals? How do their needs differ from pets?
- How can farmers protect crops?
- How can we keep an apple fresh? (engineering opportunity)

**Potential Assessment Opportunities**

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing ( "beginning," "middle," or "end") is noted in order to indicate approximately when the assessment should take place.*

**Example #1: (Beginning of Unit 3)**

{Evaluates Student Mastery of Objective: Identify the basic parts of a plant}

**Advance Preparation:**

- Create the assessment handout by drawing an image of a plant. Draw an arrow next to the plant's roots, stem, branches, leaves, and flower. **Note:** Students will be pasting a strip of paper on each arrow. Be sure to space the arrows so there is enough room to paste each strip.
- On separate strips of paper, write (or type) the terms, "roots," "stem," "branches," "leaves," and "flower." (Each child will need a set.)
- Gather glue sticks for each student.

**Task Assessment:** Provide each student the assessment handout. Explain that they will need to identify each part of the plant. Pass out the strip of paper with the term "roots" to each student.

**T-** (holding up a strip of paper with the word, "roots") **This word says, "roots," find the arrow that points to the roots of the plant.**

Pause for a moment in order to provide students with time to scan the picture and locate the roots. Walk around the room and check to be sure every child is pointing to an arrow on their paper.

**T- Paste the word "roots" on the arrow that points to the plant's roots.**

Repeat this process with the remaining terms.

**Example #2: (End of Unit 3)**

{Evaluates Student Mastery of Objective: Describe how farmers use natural resources to provide food for people} (K-ESS3-1)

**Advance Preparation:**

- Create a three-dimensional model depicting how crops are harvested, kept fresh, packaged and transported for people to buy and consume. **Note:** If you prefer to create a two-dimensional model, create images illustrating each step on separate pieces of paper.
- **Note:** This assessment would be best administered to students individually or to one small group of students at a time. Consider meaningful tasks that remaining students could complete independently (and/or in small group if there is another adult in the classroom).

**Task Assessment:** Ask students to describe what is happening in each step (in no particular order). **T- I want you to use this model and describe for me how food gets to your table. Think about which step happens first.**

As the children select the first step, prompt them to describe what is happening. You also may wish to have students manipulate the pieces of the model to reflect their sequence. If students forget where they left off, guide them with returning to the beginning and talking through each step.

**Potential Activities & Procedures**

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

**Example #1: (Beginning of Unit 3)**

{Contributes to the Objective: Identify the basic parts of a plant}

**Advance Preparation:** Variety of seedlings for every 1 to 3 students. The seedlings should be placed in clear cups (with minimal potting soil) so students can observe roots.

**Activity:** Place seedlings on student tables.

**T- We have been learning about various living things and their needs, such as human beings and animals. Today we are going to learn about another type of living thing—a plant.**

**T- Plants, like human beings and animals, have different parts. How do our legs and hands help us? How does fur help some animals? Plants have parts that help them in different ways. You are going to work with your partner to observe these parts and their different functions (how they help a plant live).**

**T- I am going to ask you questions and you and your partner are going to look at the plant to find the answers.**

*See examples of guiding questions above.*

**Example #2: (Beginning of Unit 3)**

{**Contributes to the Objective:** Classify plants as deciduous or evergreen}

**Advance Preparation:** Find images (or real samples) of a variety of deciduous leaves (e.g., maple leaf, red alder leaf, hazelnut leaf, etc.) and evergreen leaves (e.g. douglas fir needles, pine needles, spruce needles, madrone leaf, Oregon grape leaf, salal leaf, etc.).

**Activity:**

**T- How are these leaves different?** Probe by asking about the various characteristics, e.g., size, shape, texture, color. Note student responses on chart paper.

On a separate piece of chart paper, create a T-chart. Hold up a picture of (or actual) maple leaf. Affixing this leaf to one side of the T-chart, ask students to look at the other leaves.

**T- Which leaves have similar characteristics to this maple leaf?** As students identify specific leaves, ask them to describe the similar features. Note the characteristics at the bottom of the T-chart below these leaves.

Affix the remaining evergreen leaves to the other side of the T-chart.

**T- How are the characteristics of these leaves (pointing to the evergreen leaves) different from the leaves on this side (deciduous) of our chart? What patterns do you see?** Record student responses.

**T- The leaves on this side of the chart with [ \_\_\_\_ ] characteristics are examples of deciduous leaves.** Write deciduous on the top of that side of the T-chart. **And leaves that have [ \_\_\_\_ ] characteristics are examples of evergreen leaves.** Write evergreen on the top of this side of the T-chart.

**T-Today we are going to learn about deciduous and evergreen plants. I want to you to pay special attention to other patterns that are unique to deciduous plants and patterns unique to evergreen plants. We will add this information to our T-chart...**

**Example #3: (Middle of Unit 3)**

{**Contributes to the Objective:** Identify what plants need in order to live and grow} (K-LS1-1)

**Activity:** As students examine the means in which human beings (Unit 1), animals (Unit 2), and plants (Unit 3) interact with their environment, they will chart the collected data. Students will then identify patterns within the data (e.g., all animals eat food, some animals eat plants, some animals eat other animals, some animals eat both plants and other animals, etc.,). Students will use the patterns culled from the data to describe what human beings, animals, and plants need to survive.

### Websites & Media

**United States Botanic Garden** <https://www.usbg.gov/take-virtual-tour>

Take students on a virtual tour of the United States Botanic Garden. This living plant museum highlights the diversity of plants and demonstrates how plants can enrich human life and support the Earth's ecosystems.

**PBS Learning Video - Think Garden: Plant Structure (approximately 3 minutes)**

<http://www.pbslearningmedia.org/resource/5dea21b4-6c92-46ff-982c-8650f9429c01/think-garden-plant-structure/>

This video examines plant structure by taking a closer look at the root and shoot systems.

**PBS Learning Game - Sid the Science Kid: Vegetable Planting**

[http://pbskids.org/sid/fablab\\_vegetableplanting.html](http://pbskids.org/sid/fablab_vegetableplanting.html)

This game simulates the process of growing seedlings.

**The Story of Milk** <http://www.moomilk.com/virtual-tour>

This virtual tour describes for students where milk comes from and how it gets to their table.

**Egg Farm Virtual Field Trips** <http://www.aeb.org/educators/farm-to-table-virtual-field-trips>

Students can explore multiple poultry farms and learn about how the chickens are cared for as well as how eggs move from the farm to their tables.

### Supplemental Trade Books

*Plants and Plant Growth*

- *Big Red Tomatoes*, by Pamela Graham (National Geographic Society, 2001) ISBN 0792292219
- *Eating the Alphabet: Fruits and Vegetables from A to Z*, by Lois Ehlert (Voyager Books, 1993) ISBN 0152244360
- *Flower Garden*, by Eve Bunting and illustrated by Kathryn Hewitt (Voyager Books, 2000) ISBN 0152023720
- *From Bud to Blossom (Apples)*, by Gail Saunders-Smith (Capstone Press, 2000) ISBN 1560659513
- *Growing Vegetable Soup*, by Lois Ehlert (Voyager Books, 1990) ISBN 0152325808
- *How a Seed Grows (Let's-Read-and-Find-Out Science 1)*, by Helene J. Jordan (HarperTrophy, 1992) ISBN 0064451070

- *I Am a Leaf* (Hello Reader! Science, Level 1), by Jean Marzollo and Judith Moffatt (Cartwheel, 1999) ISBN 0590641204
- *I Am an Apple* (Hello Reader! Science, Level 1), by Jean Marzollo and Judith Moffatt (Scholastic, 1997) ISBN 0590372238
- *I'm a Seed* (Hello Reader! Science, Level 1), by Jean Marzollo and Judith Moffatt (Cartwheel, 1996) ISBN 0590265865
- *Jack's Garden*, by Henry Cole (HarperTrophy, 1997) ISBN 068815283X
- *Johnny Appleseed* (Rookie Biographies), by Christin Ditchfield (Children's Press, 2003) ISBN 0516278169
- *Johnny Appleseed*, by Reeve Lindbergh and illustrated by Kathy Jakobsen Hallquist (Little, Brown Young Readers, 1993) ISBN 0316526347
- *Maple Syrup* (Harvest to Home), by Lynne M. Stone (Rourke Publishing, 2001) ISBN 1589521285
- *Maple Syrup Season*, by Ann Purmell (Holiday House, 2008) ISBN 082341891X
- *Peanuts*, Pamela Graham (National Geographic Society, 2001) ISBN 0792289633
- *Plant Blossoms* (Look Once, Look Again Science Series), by David M. Schwartz (Creative Teaching Press, 1998) ISBN 1574713299
- *Planting a Rainbow*, by Lois Ehlert (Voyager Books, 1992) ISBN 0152626107
- *Potatoes*, by Beatrice Duggan (National Geographic, 2003) ISBN 0792242653
- *The Carrot Seed*, by Ruth Krauss and Crockett Johnson (HarperTrophy, 2004) ISBN 0064432106
- *The Honey Makers*, by Gail Gibbons (HarperTrophy, 2000) ISBN 0688175317
- *The Life and Times of a Peanut*, by Charles Micucci (Houghton Mifflin, 2000) ISBN 0618033149
- *The Life and Times of the Honeybee*, by Charles Micucci (Houghton Mifflin, 1997) ISBN 039586139X
- *The Reason for a Flower* (Ruth Heller's World of Nature), by Ruth Heller (Topeka Bindery, 1999) ISBN 0833590006
- *The Tiny Seed*, by Eric Carle (Aladdin, 2001) ISBN 0689842449
- *Why Do Leaves Change Color?*, by Betsy Maestro (HarperCollins, 1994) ISBN 0064451267
- *The Enormous Potato*, by Aubrey Davis (Kids Can Press, 1999) ISBN 9781550746693
- *George Washington Carver: Planting Ideas*, by Jennifer Kroll (Shell Education, 2010) ISBN 9781433315930
- *Seeds Sprout!*, by Mary Dodson Wade (Enslow Publishers, 2009) ISBN 9780766036147

#### *Farms and Farming*

- *A Day in the Life of a Farmer*, by Heather Adamson (Capstone Press, 2000) ISBN 0736846743
- *Barnyard Banter*, by Denise Fleming (Henry Holt and Company, 2008) ISBN 0805087788
- *Chicks & Chickens*, by Gail Gibbons (Holiday House, 2003) ISBN 0823419398
- *Fantastic Farm Machines*, by Chris Peterson and David R. Lundquist (Boyd's Mill Press, 2006) ISBN 1590782712
- *Farming*, by Gail Gibbons (Holiday House, 1990) ISBN 0823407977
- *From Seed to Pumpkin*, by Wendy Pfeffer (Harper Trophy, 2004) ISBN 0064451909



- *Growing Vegetable Soup*, by Lois Ehlert (Voyager Books, 1990) ISBN 0152325808
- *Life on a Crop Farm* (Life on a Farm), by Judy Wolfman (Carolrhoda Books, 2001) ISBN 157505518X
- *Ox-Cart Man*, by Donald Hall and Barbara Cooney (Puffin, 1983) ISBN 0140504419
- *Pigs*, by Gail Gibbons (Holiday House, 2000) ISBN 0823415546
- *Potatoes*, by Beatrice Duggan (National Geographic, 2003) ISBN 0792242653
- *Sheep*, by Rachael Bell (Heinemann, 2003) ISBN 1403440409
- *The Little Red Hen Big Book*, by Paul Galdone (Clarion Books, 1985) ISBN 0899193498
- *The Milk Makers*, by Gail Gibbons (Aladdin, 1987) ISBN 0689711166
- *The Rusty, Trusty Tractor*, by Joy Cowley (Boyd's Mills Press, 2000) ISBN 1563978733
- *The Year at Maple Hill Farm*, by Alice and Martin Provensen (Aladdin, 2001) ISBN 0689845006
- *Chicks!*, by Sandra Horning (Random House, Inc., 2013) ISBN 9780307932211
- *A Day at Greenhill Farm*, by Sue Nicholson (DK Publishing, 1998) ISBN 9780789429575

Draft

## Core Knowledge Science Program - Domain Map

### Science Content

- The four seasons
  - Characteristic local weather patterns during the different seasons
- 
- The sun: source of light and warmth
  - Daily weather changes:
    - Temperature: thermometers are used to measure temperature
    - Clouds
    - Rainfall: how the condition of the ground varies with rainfall; rainbows
    - Thunderstorms: lightning and thunder, hail, safety during thunderstorms
    - Snow and snowflakes, blizzard

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***  
*Standards noted with an asterisk (\*) are those that incorporate engineering and design*

**K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time.

**K-ESS3-2.** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.\*

**K-PS3-1.** Make observations to determine the effect of sunlight on Earth's surface.

**K-PS3-2.** Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.\*

***Rationale:***

This unit directly relates to all four of these standards, which are grouped within the NGSS topic of [Weather and Climate](#) for Kindergarten. The applicable core ideas embedded within this unit are: [ESS2.D](#), [ESS3.B](#), [ETS2.B](#), and [PS3.B](#). This unit also presents an excellent opportunity for students to apply their early learning about the sun, temperature, and thermometers to complete a design challenge relative to standard [K-PS3-2](#).

This Core Knowledge Science unit also kicks off the progression for learning about seasonal cycles and patterns, which will be extended and applied in Grade 1 during the Unit 2 *Astronomy*.

**This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:**

This unit connects to many future topics and standards, including:

[1-ESS1-1](#), [1-ESS1-2](#), [2-ESS1-1](#), [2-ESS2-1](#), [2-ESS2-3](#), and the [Grade 2 Topic: Structure & Properties of Matter](#).

**Rationale:**

This unit is a particularly important foundation for students as the phenomena of seasons and weather reach across multiple disciplines in science. Through this unit students begin their earliest understandings of the sun ([ESS1.A](#)), they begin discussing cycles of events on Earth ([ESS1.C](#))—seasonal patterns ([ESS1.B](#))—as well as the importance of wind and water in Earth’s systems ([ESS2.A](#) and [ESS2.C](#)). This unit also offers students concrete examples and experiences with temperature and the different states of matter ([PS1.A](#)) as they apply their previous learning about the basic needs of humans, other animals, and plants ([LS1.C](#)).

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

#### POTENTIAL CCSS Math Connections

[MP.2](#) Reason abstractly and quantitatively. (K-ESS2-1)

[MP.4](#) Model with mathematics. (K-ESS2-1),(K-ESS3-2)

[K.CC](#) Counting and Cardinality (K-ESS3-2)

[K.CC.A](#) Know number names and the count sequence. (K-ESS2-1)

[K.MD.A.1](#) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)

[K.MD.A.2](#) Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K- PS3-1),(K-PS3-2)

[K.MD.B.3](#) Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

**POTENTIAL** CCSS ELA Connections

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(K-PS3-2),(K-ESS2-1)

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)

**POTENTIAL** Cross-Curricular Connections

**ELA:** Poetry—"It's Raining, It's Pouring," "April Rain Song," "Rain, Rain, Go Away," "I Do Not Mind You, Winter Wind," "The More It Snows," and "Rain"

Sayings & Phrases—"April showers bring May flowers" and "[It's] raining cats and dogs"

**Visual Arts:** Elements of Art (Color)—Pieter Bruegel the Elder, *Hunters in the Snow*

**Music:** Songs—"Eensy, Weensy Spider"

**Mathematics:** Measurement of temperature and time—relative temperatures (hotter/colder), sequencing events, and orientation in time (today, yesterday, tomorrow; morning, afternoon; this morning versus yesterday morning, etc.)

**Prior Knowledge****Core Knowledge Preschool Sequence**

Scientific Reasoning and the Physical World

*Goal: Demonstrate an initial understanding of the living world*

Observe, describe and record:

- some basic properties of water, its presence and its effects in the physical world
- some basic properties of air, its presence and its effects in the physical world
- some basic properties of light, its presence and its effects in the physical world
- some characteristics of weather
- some characteristics of the seasons

**CKLA Preschool**

- Defining, reviewing, and expanding on words such as *autumn, spring, summer, and winter* relative to specific habitats (e.g., woodlands and deserts)

**Core Knowledge Science** (Previously taught Kindergarten units)

*Unit 3 Plants & Farms*

- Identify what plants need in order to live and grow
- Compare and contrast plants' basic needs (to survive) to the needs of animals and human beings
- Identify the needs of crops on a farm
- Describe the process of harvesting crops to people purchasing produce to consume

## CKLA Kindergarten Objectives

The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).

### Domain Anthology, *Seasons and Weather*

- Demonstrate understanding of the following units of time and their relationship to one another: day, week, month, year
- Name the four seasons in cyclical order, as experienced in the United States, and correctly name a few characteristics of each season
- Characterize winter as generally the coldest season, summer as generally the warmest season, and spring and autumn as transitional seasons
- Draw pictures that show an understanding of each season
- Characterize the North and South Poles as always cold in temperature, the middle section of the earth as usually warm, and most of the United States as having four seasons
- Describe daily weather conditions of their own locality in terms of temperature (hot, warm, cool, cold), cloud cover (sunny, cloudy), and precipitation (rain, snow, or sleet)
- Name at least one month in a specific season while referring to a calendar
- Name at least one holiday in a specific season
- Describe any unique seasonal differences that are characteristic of their own locality (change of color and dropping of leaves in autumn; snow or ice in winter; increased rain and/or flooding in spring, etc.)
- Identify ways in which weather affects daily routines, such as dress, activities, etc.
- Identify a thermometer as an instrument used to measure temperature and describe how it works: when it is hotter outside, the liquid in the thermometer rises; when it is cooler, the liquid descends
- Explain the lesson the grasshopper learns at the end of the fable “The Grasshopper and the Ants”
- Identify the following characteristics of thunderstorms: heavy rain, thunder, lightning, and strong winds
- Describe safe and unsafe behaviors during thunderstorms
- Explain why weather prediction is important in their daily lives

## What Students Will Learn in Future Grades

### Core Knowledge Sequence

#### Grade 2

#### II. Cycles in Nature

- A. Seasonal Cycles
  - Four Seasons and Earth's orbit around the sun
  - Seasons and life processes

- C. Introduction to the Water Cycle
- Most of the earth’s surface is covered by water.
  - The water cycle:
    - Evaporation and condensation
    - Water vapor in the air, humidity
    - Clouds: cirrus, cumulus, stratus
    - Precipitation, groundwater

**Grade 4**

V. Meteorology (including review from Grade 2)

- The Water Cycle: evaporation, condensation, precipitation
- Types of clouds: cirrus, stratus, cumulus
- The atmosphere:
  - Troposphere, stratosphere, mesosphere, thermosphere, exosphere
  - How the sun and the earth heat the atmosphere
- Air movement: wind direction and speed, prevailing winds, air pressure, low and high pressure, air masses
- Cold and warm fronts: thunderheads, lightning and electric charge, thunder, tornadoes, hurricanes
- Forecasting the weather: barometers (relation between changes in atmospheric pressure and weather), weather maps, weather satellites
- Weather and climate: “weather” refers to daily changes in temperature, rainfall, sunshine, etc., while “climate” refers to weather trends that are longer than the cycle of the seasons

**Core Vocabulary**

*The following list contains the core vocabulary words suggested for purposeful integration across this Kindergarten unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program \(CKLA\)](#). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.*

**Seasons**

*season, **autumn**, fall, winter, spring, summer, year, month, [months of the year], calendar, **cycle**, earth, daylight, weather, average, trend, different, change, **condition**, warm(er), cool(er), wet, dry, outside, inside, [activities common during the different seasons]*

**Predicting Weather**

***meteorologist**, meteorology, **forecast**, news, radio, station, **predict**, community, area, map, outlook, notice, record, describe, effect, cause, problem, danger, careful, cautious, safety, precaution, rule, raincoat, umbrella, cancel, help, tool, technology, structure, satellite, weather vane, design, warning, siren, prepare, respond, **reduce**, impact, event, indoor, outdoor, shelter*

### Local Weather Patterns

water, rain, rainfall, raindrop, snow, snowflake, ice, crystal, **precipitation**, soak, shower, wind, direction, blowing, atmosphere, air, sun, sunlight, heat, local, **pattern**, daily, temperature, thermometer, humid, **measure**, take, record, chart, observe, observation, data, morning, afternoon, freezing, melt(ing), thaw, characteristic, normal, common, (un)likely, rare, sometimes, often, climate, **region**, zone

### Other Weather Patterns

sunny, cloud(y), calm, **overcast**, thunder, lightning, strike, flash, boom, loud, rumble, clap, storm, **severe**, extreme, **blizzard**, harsh, **flood**, flash, pour, hail, sleet, puddle, **drizzle**, sprinkle, flurry, slush, splash, tornado, twister, hurricane, typhoon, rainbow, color, [colors of the rainbow] fog, mist, scatter, frigid, shovel, sweat, chill, shiver, clothing

## Potential Misconceptions

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

### Misconception: “The seasons are caused by the earth’s changing distance from the sun.”

Students of all ages (including college and adult learners) have difficulty understanding and explaining the causes of the seasons. The root misconception behind this has been identified as a belief that the earth orbits the sun in an elongated elliptical path (Galili & Lavrik, 1998; Sadler, 1998). Other students, citing the tilt of the Earth on its axis, believe that the changing distance between a hemisphere and the sun is the cause of seasons (e.g., “summer occurs because our hemisphere is closer to the sun”). Teachers should be sure to understand that the distance to the sun changes relatively little, and that these minor changes cannot explain seasonal variations.

### Misconception: “Lightning never strikes the same place twice.”

Lightning tends to strike the highest points in a given area, as a result, such locations are likely to be struck repeatedly (Nelson, Aron & Francek, 1992).

### Misconception: “Thunder occurs when two clouds collide.”

Thunder and lightning are the visible and auditory effects of a massive charge transfer between clouds. (Russell et al 1993 as cited in Dove, 1998).

### Misconception: “Snow and ice make it cold.”

Snow and ice are a result of cold temperatures, not the cause.

**Misconception: “Air and oxygen are the same thing.”**

Air is a mixture of gases, including nitrogen, oxygen, argon, and carbon dioxide.

**Misconception: “The seasons cause the weather to change.”**

Certain weather patterns and temperatures are associated with a particular season. A season is a classification of a period of time, not a force that causes weather.

**Key points for instruction:**

The existence of water vapor in the atmosphere can be difficult for students to understand even into the middle school grades (Lee. et. al, 1993; Johnson, 1998). The focus of this Kindergarten unit should be on relative amounts of rainfall and snow during certain seasons, the condition of the ground when it rains, and *not* on the causes of precipitation. Grades 2 and 4 will provide specialized instruction to address potential misconceptions such as, “When water evaporates it ceases to exist” and “Evaporated water is still liquid, but it has changed locations.”

**Potential Objectives for this Kindergarten Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Describe how weather affects people in their day-to-day lives
- Describe weather patterns and temperature at different times of the year
- Compare and contrast weather in our community to a different region of the country
- Identify the four seasons
- Describe weather patterns associated with fall and winter
- Describe weather patterns associated with spring and summer
- Identify a tool that can be used to measure temperature
- Use thermometers to measure water and air temperature (**ongoing**)
- Observe and record local weather conditions (**ongoing**)

**Middle**

- Predict when objects will have hotter and cooler temperatures
- Describe how the sun affects the temperature
- Describe how sunlight affects materials on Earth (K-PS3-1)
- Describe characteristics of clouds
- Describe what clouds tell us about the weather

**End**

- Define the term ‘forecast’
- Describe why weather forecasts are important when the weather is expected to be severe
- Describe how to stay safe during severe weather
- Describe how weather conditions change over time (e.g., over the course of several days/weeks) (K-ESS2-1)



### Potential Big Guiding Questions

#### Essential Questions:

- How do the seasons and weather affect living things?
- Why are weather forecasts important?

#### RE: Seasons:

- How are the summer and winter different?
- How are the spring and autumn (fall) similar?
- What types of activities can you do in the summer, but not in the winter?

#### RE: Weather:

- When do we get the most snow? (or rain?)
- Has this week/month been mostly rainy, cloudy, or sunny?
- What causes the outside temperature to change?
- What kinds of severe weather are common in our area?

#### RE: Forecasting the weather:

- How can weather forecasts protect people from harm?
- What tools help people to forecast the weather?
- What can you do to be safe during different kinds of storms?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing ( “beginning,” “middle,” or “end”) is noted in order to indicate approximately when the assessment should take place.*

#### Example #1: (Middle of Unit 4)

**{Evaluates Student Mastery of Objective:** “Predict when objects will have hotter and cooler temperatures,” and “Use thermometers to measure water and air temperature”}

#### Advance Preparation:

- Three plastic/paper cups labeled “A,” “B,” and “C.”
- Digital thermometers
- Access to warm/lukewarm water
- Ice cubes

**Task Assessment:** Place three cups (each filled with water) in front of a small group of students. Cup “A” is filled with warm water, cup “B” is filled with water at room temperature, and cup “C” is filled with cold water (water and ice cubes). Allow the students to take the temperature by feeling the water in each cup. Ask students to predict which cup (A, B, or C) will have the warmest temperature when measured with the

thermometer. Ask students to predict which cup will have the coldest temperature. As students make their predictions ask them to explain their thinking.

Hand each student a digital thermometer. Ask students to place their thermometers in the cup of water they think will have the coldest temperature. (Students should place their thermometers in cup “C”; however, if several students do not, that’s ok.) Ask students to read (or show you) the temperature on the thermometer. Record the temperature on chart paper. (If some students picked a different cup, ask them to feel the water and their cup and then the water in cup “C.” Ask which feels colder. Ask what that will tell them about the temperature--the water that feels colder has a colder temperature.) Ask students to place their thermometer in the cup with the warmest water. (Students can feel the water in all three cups again if they can’t remember.) Ask students to read/show you the temperature on the thermometer. Record the temperature on chart paper. Ask students which cup of water hasn’t been measured yet--cup “B.” Ask students to feel the water in cup “A” and then cup “B.” Share the water temperature they measured for cup “A,” then ask students if they believe that the water in cup “B” will have a warmer temperature than cup “A,” and why. Students should predict that “A” will have a warmer temperature because the water in that cup feels warmer than the water in cup “B.” Ask students to place their thermometers in cup “B” and share the temperature. Record the temperature on the chart paper. Direct student’s attention to the chart paper and discuss how the feeling of the water (warm, room temperature, cold) compared to the actual water temperature. Water that felt warm had a warmer temperature than water that felt cold.

#### Example #2: (Middle of Unit 4)

{Evaluates Student Mastery of Objective: “Describe how sunlight affects materials on Earth (e.g., sand, dirt, rocks, water, grass)”} (K-PS3-1)

#### Advance Preparation:

- This assessment requires the following objects:
  - two rocks (approximate same size and shape)
  - two cups filled with same amount of dirt or potting soil
  - two cups filled same amount of water
  - two cups filled with the same amount of grass clippings or leaves.
- Place one of each object in an area of your classroom that is shaded and place the remaining objects on a windowsill or area of your classroom that receives direct sunlight for most of the day. It may be helpful to place each object that is sitting in the sun on top of a small colored plate (e.g., green) and use plates of a different color (e.g., purple) for each object sitting in the shade. Let the objects sit out for a day (or several if sunlight is limited) prior to administering this task assessment.

**Task Assessment:** Place the alike objects side-by-side in front of a small group of students. Confirm with students that each of these materials are found on Earth. The materials on green plates have been sitting on the window sill for the past \_\_\_ days while the objects that are placed on the purple plates have been placed [location of the classroom], which does not receive direct sunlight.

**T- You will be comparing these materials through careful observations. You will use your sense of touch to determine how the sun can affect materials on Earth.**

Ask the students to pair up and provide each pair with alike objects (e.g., the two rocks). Ask them to first feel the object that has been sitting in the shade (on the purple plate) and describe what it feels like. Next, ask students to feel the object that has been sitting in the sun.

**T- Does it feel different?**

If needed, elicit responses by asking guiding questions, such as, “How does it feel different compared to the \_\_\_ that was sitting in the shade?” Students should respond that the object sitting in the sun feels warmer or hotter and the object that sat in shade feels cooler or colder. Record students’ thoughts on chart paper.

Refer students to the data collected on the chart paper. Read the observations students made when observing the objects through sight alone and then the observations they made when they touch the objects.

**T- What does that tell us about the sun? How does sunlight affect objects on Earth, like rocks, water, grass, and dirt? How do you know?**

Students responses should allude to the idea that the sun warms objects on the earth. To support their answers they should refer back to how the objects sitting in the sun felt warmer/hotter compared to objects sitting in the shade.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

#### **Example #1: (Beginning of Unit 4)**

**{Contributes to the Objectives:** “Describe weather patterns and temperature at different times of the year”}

**Activity:** To activate students’ prior knowledge about the seasons (and connecting this to Unit 1 *The Human Body: Basic Needs & Five Senses*) encourage your class to think about what they see, hear, smell, taste, and/or touch during different times of the year {asking about one sense at a time}. Write all ideas on chart paper, sorting by the time of year or season as defined by the students. Consider also prompting the students to think about the types of weather that they would expect to see, hear, etc. during different times of the year. Discuss with students that, during this unit, they will learn more about differences between times of the year called seasons, such as how much rain or snow falls and/or how hot or cold it is outside. Post and return to this chart as students progress across the unit to review and add to your list of predicted observations.

**Example #2: (Beginning of Unit 4)**

{**Contributes to the Objective:** “Use thermometers to measure water and air temperature”}

**Activity:** As part of a daily routine (e.g., morning calendar activities), discuss local weather conditions. This should include asking students if the weather is visibly sunny, windy, cloudy, rainy, snowy as well as collecting the daily temperature.

If possible, affix an analog thermometer outside a classroom window that can be read from inside. Explain that this type of thermometer measures the air temperature and model daily how you read the outside temperature. If and when students are able, ask them to read the daily temperature. At the end of every week discuss the recorded weather patterns.

**Websites & Media****Timelapse Videos of the Seasons:**

<https://vimeo.com/search?duration=short&q=timelapse+seasons>

Timelapse videos of an area can highlight the kinds of changes that occur over extended periods of time. For example, you might show this [40 second video of a woodland area](#) that begins in the winter and progresses through all four seasons.

**Interactive Seasons Activities:**

<http://www.sheppardsoftware.com/scienceforkids/seasons/seasons.htm>

Select an interactive game to create images of the seasons using your students’ examples of what they might see or hear during each one. The images can be “painted” using colors and representations of the animals, plants, and activities that are identified by your students. The resulting image can also be printed to display a class-created picture of each season.

**Weather Games for Kids:** <http://www.weatherwizkids.com/weather-games.htm>

You may be able to use some of these digital games with your students, such as the *Weather Word Search* to find and discuss vocabulary used in this domain.

**Weather Underground:** <http://www.wunderground.com>

The Weather Underground network offers a wide selection of digital media that you could consider sharing with students. This includes [live webcams of weather around the U.S. and the world](#) (as well as time lapse videos of past days), [photos of various weather occurrences](#), and even [informative videos for teachers to learn more](#).

**Weather and Climate Resources from the OSU College of Education and Human Ecology:**

<http://beyondpenguins.ehe.osu.edu/issue/weather-and-climate-from-home-to-the-poles/>

The “Beyond Penguins and Polar Bears” project at OSU maintains useful information for teachers to build their background knowledge and to plan effective instruction that includes polar regions/examples so that they highlight the diversity of life and environments on Earth. Professional development resources, articles, and high-quality examples of lessons and activities are linked throughout this website and are offered under an Attribution-ShareAlike 3.0 Unported [Creative Commons License](https://creativecommons.org/licenses/by-sa/3.0/).

**SciJinks: It’s All About Weather:** <http://scijinks.jpl.nasa.gov/menu/topics/>

SciJinks is a joint project of NOAA and NASA that provides resources and digital media for topics including weather, satellite meteorology, and Earth science. The website is designed for middle and highschool students and their educators, however the Topics section can help you to build your background knowledge (e.g., “[What is the difference between climate and weather?](#)” and “[What is a heat wave?](#)”). The Multimedia section of this site also offers excellent digital photos of weather phenomena such as [clouds](#) and [other extreme weather, including tornadoes](#). An image or two from this set could be displayed to students and spark their questions and discussions about these amazing happenings.

**Supplemental Trade Books**

- *Animals in Winter* (Let’s-Read-and-Find-Out Science 1), by Henrietta Bancroft and Richard G. Van Gelder (HarperTrophy, 1996) ISBN 0064451658
- *Bring Me Some Apples and I’ll Make You a Pie: A Story about Edna Lewis*, by Robin Gourley (Houghton Mifflin Harcourt Publishing Company, 2009) ISBN 0618158362
- *Can You See the Wind?* (Rookie Read-About Science), by Allan Fowler (Children’s Press, 1999) ISBN 0516264796
- *The Cloud Book*, by Tomie de Paola (Holiday House, 1975) ISBN 0823405311
- *Energy from the Sun* (Rookie Read-About Science), by Allan Fowler (Children’s Press, 1998) ISBN 0516262556
- *Fall* (Thinking About the Seasons), by Clare Collinson (Sea-to-Sea Publications, 2011) ISBN 1597712590
- *Frederick*, by Leo Lionni (Dragonfly Books, 1973) ISBN 0394826140
- *Frog and Toad All Year*, by Arnold Lobel (HarperFestival, 1990) ISBN 1559942282
- *Four Seasons Make a Year*, by Anne Rockwell and pictures by Megan Halsey (Walker & Company, 2004) ISBN 0802788831
- *It’s Cold Where I Live*, by Leroy Taylor (National Geographic School Publishing, 2003) ISBN 0792242807

- *The Lake*, by Lily Richardson (National Geographic Society, 2003) ISBN 0792243498
- *The Reasons for Seasons*, by Gail Gibbons (Holiday House, 1996) ISBN 0590907352
- *The Seasons of Arnold's Apple Tree*, by Gail Gibbons (Voyager Books, 1988) ISBN 0152712453
- *Snow Is Falling* (Let's-Read-and-Find-Out-Science, Stage 1), by Franklyn Branley and Holly Keller (HarperTrophy, 2000) ISBN 0064451860
- *Snowflake Bentley*, by Jacqueline Briggs Martin (Houghton Mifflin, 1998) ISBN 0395861624
- *Tools Measure Weather*, by Lesley Pether (National Geographic School Publishing, 2003) ISBN 0792243420
- *Tornado Alert* (Let's-Read-and-Find-Out Science 2), by Franklyn M. Branley and Giulio Maestro (HarperTrophy, 1999) ISBN 0064450945
- *Watch the Sky*, by Jacob Fink (National Geographic Society, 2001) ISBN 0792289234
- *Weather Forecasting*, by Gail Gibbons (Aladdin Library, 1993) ISBN 0689716834
- *Weather in the City*, by George Wong (National Geographic Society, 2001) ISBN 0792289463
- *Weather Words and What They Mean*, by Gail Gibbons (Holiday House, 1992) ISBN 082340952X
- *What Will the Weather Be?*, by Linda DeWitt and illustrated by Carolyn Croll (HarperTrophy, 1993) ISBN 0064451135
- *What's the Weather Today?*, by Allan Fowler (Children's Press, 1991) ISBN 0516449184
- *When a Storm Comes Up* (Rookie Read-About Science), by Allan Fowler (Children's Press, 1995) ISBN 0516460358
- *When Spring Comes*, by Solomon Gordon (National Geographic Society, 2006) ISBN 0792242742
- *Why Do Leaves Change Color?* (Let's-Read-and-Find-Out Science, Stage 2), by Betsy Maestro and Loretta Krupinski (HarperTrophy, 1994) ISBN 0064451267
- *Winter* (Thinking About the Seasons), by Clare Collinson (Sea-to-Sea Publishing, 2011) ISBN 1597712620
- *Winter Is Here*, by Sid Webb (National Geographic Society, 2003) ISBN 0792242920
- *The Boy Who Didn't Believe in Spring*, by Lucille Clifton (Penguin Young Readers Group, 1992) ISBN 9780140547399
- *A Tree for All Seasons*, by Robin Bernard (National Geographic, 2001) ISBN 9780792266747
- *Whatever the Weather*, by Karen Wallace (DK Publishing, 1999) ISBN 9780789447500

Core Knowledge Science Program—Domain Map

Core Knowledge Science Content

- Some natural resources are limited, so people must be careful not to use too much of them (for example, oil deep in the earth used to make gasoline, wood from trees used to burn, build homes, and/or to make paper, and water for drinking, cooking, washing, etc.)
- Conservation: Practical measures for conserving energy and resources (for example, walking or using public transportation instead of driving a car, planting saplings to replace trees that are cut down, not leaving water running when not being used, limiting how often lawns and decorative plants are watered, turning off unnecessary lights, etc.)
- Some materials can be recycled (for example, aluminum, glass, paper)
- Pollution (for example, littering, smog, and water pollution) can be harmful, but if people are careful they can help to reduce pollution.

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***  
*Standards noted with an asterisk (\*) are those that incorporate engineering and design*

***K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.***

***K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.\****

***Rationale:***

This unit extends learning from two previous units, *Animals & Their Needs* and *Plants & Farms*, to connect student knowledge to the developing core idea of [ESS3.C](#) (Human Impacts on Earth’s Systems). Specifically, the concept of organisms changing their environment (DCI [ESS2.E](#)) is applied and extended through connection to the concept of the conservation of natural resources ([ESS3.A](#)). These are three core ideas central to the NGSS Kindergarten topic of [Interdependent Relationships in Ecosystems](#).

***K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.***

***Rationale:***

The core idea of natural resources ([ESS3.A](#)) is also central to this particular standard, K-ESS3-1, which notes in its DCI Foundation Box: “Humans use natural resources for everything that they do.” This unit connects student knowledge about human and animal needs (Units 1 and 2), and about farming (Unit 3), with new student learning about natural resources.

**This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:**

**2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.**

**2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.\***

**Rationale:**

As students learn that some materials can be recycled, such as aluminum, glass, and paper, they are beginning the early progression of [PS1.A](#) by discussing different kinds of matter and classifying examples “by [their] observable properties (e.g., visual, aural, textural), by [their] uses, and by whether [they] occur naturally or [are] manufactured.” (Framework, page 108)

This idea will be extended by the introduction to magnets in Kindergarten Unit 6, *Pushes, Pulls, & an Introduction to Magnets*, during which students will classify materials according to whether they are or are not attracted to a magnet. In future grades, this progression will continue in Grade 1 Unit 5: *Matter & Its Properties*; in Grade 1 Unit 6: *Introduction to Electricity* (re: conductive versus nonconductive materials); and in Grade 2 Unit 4: *Magnetism* (re: naturally occurring lodestones versus manufactured magnets). This idea will then be applied in Grade 2 Unit 5: *Simple Machines* during an engineering design challenge.

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music may help as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

**POTENTIAL CCSS Math Connections**

MP.2 Reason abstractly and quantitatively. (K-ESS3-1)

MP.4 Model with mathematics. (K-ESS3-1)

K.CC Counting and Cardinality (K-ESS3-1)



**POTENTIAL** CCSS ELA Connections

R.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)

W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2), (K-ESS3-3)

SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)

**POTENTIAL** Cross-Curricular Connections**Potential Links:**

**ELA:** Sayings & Phrases—"Waste not, want not."

**History & Geography:** American Presidents, Past and Present—Theodore Roosevelt (a pioneer for conservation as a naturalist and environmentalist)

**Mathematics:** Patterns & Classification—Establish concepts of likeness and difference by sorting and classifying objects according to various attributes; define a set by the common property of its elements; in a collection of objects that includes a given set and an item that does not belong, indicate which item does not belong.

**Prior Knowledge****Core Knowledge Preschool Sequence**

Scientific Reasoning and the Physical World

**Goal:** *Demonstrate an initial understanding of the elements of the material world.*

**Level II**

- Observe, describe, and record some basic properties of water, air, and light, their presence, and their effects in the physical world
- Identify and describe objects that can be recycled
- Identify and describe some ways that resources and energy can be conserved (e.g., recycling, turning off the lights, turning off the water, etc.)

**Core Knowledge Science** (Previously taught Kindergarten units)

**Unit 1: The Human Body: Basic Needs & Five Senses**

Identify the basic needs of human beings.

**Unit 2: Animals & Their Needs**

Describe how animals can change their habitats in order to meet their needs.

**Unit 3: Plants & Farms**

- Identify what plants need in order to live and grow.
- Compare and contrast plants' basic needs (to survive) with the needs of animals and human beings

**CKLA Kindergarten Objectives**

*The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

**Domain Anthology: Taking Care of the Earth**

- Explain why people have a special responsibility to take care of the earth.
- Explain that earth is composed of natural resources (land, water, and air) and that humans, plants, and animals depend on earth's natural resources to live.
- Explain different types of pollution, including litter, air pollution, and water pollution, and how most types of pollution are caused by people.
- Explain what happens to garbage, from its creation to being dumped in the landfill; to recyclable materials, from home to a recycling factory; to discarded food, from the table, to the compost pile, and to the garden; and the water cycle.
- Identify the recycling symbol and the phrase "reduce, reuse, and recycle," and understand that recycled materials are made from items that have already been used and otherwise would be garbage.
- Identify common recyclable materials, including glass, plastic, aluminum, cardboard, and paper; and that composting is a type of recycling.
- Identify possible solutions for the problems of garbage, litter, pollution, and conserving natural resources.

**What Students Will Learn in Future Grades****Core Knowledge Sequence****Grade 1: Living Things & Their Environments****C. Environmental Change and Habitat Destruction**

- Environments are constantly changing, and this can sometimes pose dangers to specific habitats, for example:
  - Effects of population and development
  - Rain forest clearing, pollution, and litter

**Grade 3: Ecology** (including review from Grade 1)

- Habitats, the interdependence of organisms with their environment
- The concept of a “balance of nature” (constantly changing, not a static condition)
- The food chain or food web: producers, consumers, and decomposers (*although the tendency is to recognize the limits of these models as well; see also Grade 1.*)
- Ecosystems: how they can be affected by changes in environment (for example, rainfall, food supply, etc.), and by human impacts on the earth
- Human impacts on the environment:
  - Air pollution: emissions, smog
  - Water pollution: industrial waste, runoff from farming
- Measures we can take to protect the environment (for example, conservation, recycling)

**Core Vocabulary**

The following list contains the Core Vocabulary words suggested for purposeful integration across this Kindergarten unit. Boldfaced terms can be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program \(CKLA\)](#). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

**Natural Resources**

environment, **natural resource**, manufactured, riches, use, activity, depend, need, want, find, locate, important, everyday, comfort, planet, earth, consume, limited, abundant, waste, grow, replenish, replace, **(non)renewable**, material, substance, product, production, consumption, fossil, **fuel**, coal, gas, oil, petroleum, sunlight, minerals, soil, trees, plants, crops, land, livestock, food, water, ocean, river, stream, lake, ice, glacier, air, atmosphere, ozone

[Also consider how to apply previously learned vocabulary from Unit 3 Plants & Farms]

**Human Impacts on the Environment**

change, impact, consequence, global, world, **cause**, **effect**, long-term, short-term, **system**, **cycle**, interact, conserve, sustain, reduce, lessen, save, help, clean, preserve, protect, aware(ness), careful, practical, effective, responsible, reminder, positive, negative, environment, habitat, community, population

**Pollution and Garbage**

**pollution**, pollutant, harm(ful), hazard(ous), dangerous, litter, dispose, discard, waste, **packaging**, landfill, dump, garbage, trash, mess, pile, bin, litterbug, smog, car, truck, vehicle, factory, company, smoke, burn, decay, **toxic**, contamination, health, clean, fresh, **treatment**, destroy, exhaust, chemical, industrial, urban, rural

### Recycling

reuse, recycle, **recyclable**, renew, symbol, aluminum, can, newspaper, paper, bottle, glass, plastic, soda, jug, bag, cardboard, compost, collect, **transport**, recycling center, shredder, heat, oven, **furnace**, remove, smelt, melt, blend, mix, pour, cool, harden, roll, mill, flatten, reshape, shipment, procedure, **process**, step-by-step, [examples of items made from recycled material]

### Other Forms of Conservation

faucet, sink, light switch, electricity, forest, woods, **logging**, wood, paper, [items made of wood and paper], erosion, weathering, plant, park, rain forest, tropical, temperate, **diversity**, species, **alternative**, solar, wind, hydroelectric, electric, nuclear, green, bikes, carpool, transportation, bus, [other types of mass transit]

## Potential Misconceptions

Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.

### Misconception: “Different kinds of organisms (species) do not compete for the same natural resources.”

Students may conclude that different organisms/species use different resource stores (i.e., sources of resources) to meet their needs for food, water, space, and/or light. This idea may be reinforced by oversimplified representations of food chains/webs without special instruction to uncover and address this misconception. Increasingly complex relationships in the environment will be systematically explored through the CK Science program and across grades K–5.

### Misconception: “Conservation means not using natural resources.”

This is an overgeneralization. For example, humans need fresh water to survive, so we must use this natural resource in order to live. There are at least two different ways to approach conservation: *conservation* in the sense of reducing the use of certain natural resources (i.e., “use this, not that,” such as using reusable water bottles instead of plastic ones that may be thrown away); and *efficiency* in the sense of doing what we need/want with fewer resources (i.e., solving the problem of “how can we do more with less?”).

**Misconception: “Organisms of the *same* species do not compete with each other for natural resources.”**

Similar to the above misconception, students may conclude that organisms of the *same species* (or in similar groups or classes) use different resource stores to meet their needs (i.e., they rely on different sources of water, food, and/or light). For example, some students state that plants do not compete with other plants for light, water, and space. This may be reinforced by simplified representations of food chains/webs without special instruction to uncover and address this misconception. Increasingly complex relationships in the environment will be systematically explored across grades K–5.

**Key points for instruction:**

“Students of all ages . . . may have the tendency to imagine that all environmentally friendly actions help to solve all environmental problems (for example, the use of unleaded petrol reduces the risk of global warming),” (*Atlas of Science Literacy*, Vol. 2, pg. 20, AAAS Project 2061). As instruction progresses within and across the grades, teachers should attempt to clearly and accurately foster descriptions of cause and effect relationships.

**Potential Objectives for This Kindergarten Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Explain what a “natural resource” is and give at least three examples
- Identify everyday objects that are made from natural resources
- Describe how humans use the earth’s natural resources (K-ESS3-1)
- Identify common resources that are limited and nonrenewable
- Classify resources as renewable or nonrenewable
- Describe how humans have changed the environment around them in order to meet their needs (K-ESS3-2)
- Identify examples of garbage produced by humans
- Describe why landfills pose a problem for humans, animals, and plants
- Identify different forms of pollution
- Describe why pollution poses a problem for humans, animals, and plants

**Middle**

- Describe why humans have a special responsibility to take care of the earth
- Describe how humans can reduce the pollution in their environment
- Identify items that can be used over and over again
- Identify materials that can be recycled (2-PS1-1)

- Classify objects as recyclable or as garbage
- Compare and contrast the process of composting with the process of recycling

**End**

- Identify how we can conserve energy and resources
- Describe the significance of Earth Day
- Develop solutions that can protect the earth's natural resources (K-ESS3-3)

**Potential Big Guiding Questions****Essential Questions:**

- **What is a natural resource?**
- **How do humans depend on earth's natural resources?**
- **How do humans change the planet?**

RE: Natural Resources and Human Impacts on the Environment:

- What kinds of natural resources are used in our classroom?
- How do humans depend on other animals as well as on plants? (application of previous units)
- How do humans change their environment to meet their needs? (application of previous units)

RE: Pollution, Garbage, and Recycling

- How much waste do we produce as a class in a day (or week)?
- What items can we use over and over again without making waste?
- Where do our newspapers, cans, and bottles go when we recycle them?

RE: Other Conservation Efforts

- What other kinds of natural resources do we often use?
- What can we do to limit our impact on the environment?
- Why do people use compost piles?

**Potential Assessment Opportunities**

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing ("beginning," "middle," or "end") is noted in order to indicate approximately when the assessment should take place.*

**Example #1: (Beginning of Unit 5)**

{**Evaluates Student Mastery of Objective:** Describe why pollution poses a problem for humans, animals, and plants.}

**Advance Preparation:** Create the assessment handouts by dividing pieces of paper in half (top to bottom). At the top of the page, draw or attach three images depicting a plastic bag on the ground,

exhaust coming from a car's tailpipe, and an image of wastewater spilling into a river. Leave the bottom half of the paper blank for students to complete the task assessment.

**Task Assessment:** Ask students to describe what they see in each image. Through guided questioning, help students understand that each image is a representation of pollution. Explain to students that they will select one image, and in the space below (at the bottom of their paper), they will draw what that specific form of pollution does to the people, animals, and/or plants nearby. Rotate around the room, asking students to describe their illustrations, and transcribe their ideas on the bottom of the handouts. (Students, who are ready and able, can write words/phrases that describe their drawings.) Ask students to elaborate on why the pollution poses a problem for humans, animals, and/or plants in the immediate area.

### Example #2: (Middle of Unit 5)

{Evaluates Student Mastery of Objective: Identify materials that can be recycled.} (2-PS1-1)

#### Advance Preparation:

- This activity requires a piece of chart paper or board, magazines, scissors, glue/tape, and large pieces of paper or poster board, one for each pair of students.
- Draw a T-chart on each piece of paper/poster board. On the left side of the chart, draw a symbol that represents “recycling” or affix a green dot; on the right side, draw a symbol that represents “trash” or affix a red dot. You may also wish to tear out magazine pages ahead of time with images of food and other everyday items for students to cut out. Also have two to three images of recyclable and non-recyclable materials of your own to elicit students’ ideas during the introduction of this assessment opportunity.

**Task Assessment:** After the materials have been distributed to each table, explain to students that they will pair up with a partner to flip through a magazine (or magazine pages), looking for materials that can be recycled, as well as items that need to be thrown away after use.

**T- What types of materials can be recycled?** Engage students in a discussion to review the recyclable items previously taught: aluminum (cans), glass (bottles), plastic (bottles), and paper (newspapers, magazines, etc.). As students review each item, tape/paste a corresponding image on a piece of chart paper, and label each example (e.g., affix an image of a plastic soda bottle and label it as “plastic”).

After the review, ask students to work in pairs to sift through the magazine pages and to identify recyclable and non-recyclable items. Pairs should work to cut out each image and to glue or tape it onto their T-charts in the correct sections. As students work on the activity, rotate from table to table, asking the pairs of students to describe the items they have identified as recyclable and those that need to be thrown in the trash—and why.

After students have had the opportunity to identify several items that are recyclable, as well as those that are not, ask pairs to “present” their findings to the whole group. *(Try to call on at least one pair that found a plastic, glass, or aluminum product not in the form of a can or bottle. Or, if necessary, be sure that you have such an example ready to be discussed if no one finds such an example. During previous instruction, students focused on plastic/glass bottles and aluminum cans as recyclable products. Using different products—such as milk jugs, pickle or baby food jars, and cereal boxes—will help students to*

*recognize that the material from which a product is made is what makes the product recyclable and not how the product is used.)* As students identify products that can be recycled, ask them (and classmates in the audience) to explain their thinking. Through questioning, guide students to focus on and describe the materials from which each product is made. Refer back to the review chart made during the introduction to this assessment as needed.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

#### **Example #1: (Ongoing across Unit 5)**

**{Contributes to the Objective:** Describe how people can conserve energy and resources.}

**Activity:** Have students discuss possible jobs around the classroom that could contribute to taking care of the earth. Make a list of these jobs, and then add them to your daily classroom jobs/routines. Examples may include making sure that paper is being recycled, that the water is turned off in the bathrooms or in classroom sinks, and/or making sure classroom lights are turned off when they are not needed. At the end of the week, have students report back to the class about how they have progressed with their jobs. This is a concrete way to begin having children think about and communicate actions to reduce the human impacts on the earth.

#### **Example #2: (Middle of Unit 5)**

**{Contributes to the Objectives:** Identify examples of garbage produced by humans; and Describe why landfills pose a problem for humans, animals, and plants.}

**Activity:** Track how much garbage is produced and the amount of recyclable items collected by your class each day.

Set up both recycling and trash bins in an area that is easily accessible in your classroom. At the end of each day, weigh the trash bin and the recycling bin using a weight or spring scale. On chart paper or the board, record how much trash (in grams or pounds) the classroom produced that day as well as how much trash students were able to save from landfills by recycling. At the end of the month, determine the total amount of trash collected and how much was recycled. Ask students to think about how their efforts to recycle impacted their environment.



## Websites & Media

### Pictures & Histories of U.S. National Parks:

<http://kids.nationalgeographic.com/explore/history/history-of-the-national-parks/>

This website provides information and images related to the national resources preserved through our national parks.

### Children of the Earth United: <http://childrenoftheearth.org/>

Use this website to find educational materials that focus on the earth's natural resources, as well as on conservation methods such as recycling.

### Conservation and Recycling Activities, Challenges, and Pledges:

- Billion Acts of Green—<http://www.earthday.org/take-action/>
- DoSomething.org—[https://www.dosomething.org/search/apachesolr\\_search/recycling](https://www.dosomething.org/search/apachesolr_search/recycling)

Initiatives such as these offer periodic challenges and pledges that you might select with your students to sign up for and complete. Challenges have ranged from “Clean Like a Champion,” during which teams sign up for a high-paced, athletic cleanup of a local park, to signing a pledge to reduce plastic waste by switching from disposable bottles to reusable alternatives instead.

## Supplemental Trade Books

- *And Still the Turtle Watched*, by Sheila MacGill-Callahan (Puffin, 1996) ISBN 0140558365
- *Caring for Earth*, by Solomon Gordon (National Geographic Society, 2003) ISBN 0792243153
- *Garbage and Recycling* (Young Discoverers: Environmental Facts and Experiments), by Rosie Harlow and Sally Morgan (Kingfisher, 2002) ISBN 075345503X
- *I Am Water* (Hello Reader! Level 1 Science), by Jean Marzollo and Judith Moffatt (Cartwheel, 1996) ISBN 0590265873
- *It's Earth Day!* (Little Critter), by Mercer Mayer (HarperFestival, 2008) ISBN 0060539593
- *Just a Dream*, by Chris Van Allsburg (Houghton Mifflin, 1990) ISBN 0395533082
- *The Lorax*, by Dr. Seuss (Random House Books for Young Readers, 1971) ISBN 0394823370
- *Rachel: The Story of Rachel Carson*, by Amy Ehrlich and Wendell Minor (Voyager Books, 2008) ISBN 0152063242
- *Recycle!: A Handbook for Kids*, by Gail Gibbons (Little, Brown Young Readers, 1996) ISBN 0316309435
- *A River Ran Wild*, by Lynne Cherry (Voyager Books, 2002) ISBN 0152163727
- *The Three R's: Reduce, Reuse, Recycle* (What Do You Know About? Books), by Nuria Roca and Rosa M. Curto (Barron's Educational Series, 2007) ISBN 0764135813
- *The Wartville Wizard*, by Don Madden (Aladdin, 1993) ISBN 0689716672

- *Where Does the Garbage Go?*, by Paul Showers and illustrated by Randy Chewning (Harper Trophy, 1994) ISBN 0064451143
- *Why Should I Save Water? (Why Should I?)*, by Jen Green (Barron's Educational Series, 2005) ISBN 0764131575
- *The Wump World*, by Bill Peet (Sandpiper, 1981) ISBN 0395311292
- *Composting: Nature's Recycler*, by Robin Koontz (Picture Window Books, 2006) ISBN 9781404822009
- *The Earth and I*, by Frank Asch (Houghton Mifflin Harcourt, 2008) ISBN 9780152063955
- *Keeping Water Clean*, by Helen Frost (Capstone Press, 2000) ISBN 9780736848770

Draft

## Core Knowledge Science Program—Domain Map

### Science Content

- Pushes and pulls can have different strengths and directions
- When objects touch, they push on one another even if the objects do not move
- Pushing or pulling on an object can start motion or stop it
- When objects collide they can change the speed or direction of previous motion
- A bigger push or pull makes things speed up or slow down more quickly
- Identify familiar everyday uses of magnets (for example, in toys, in cabinet locks, in “refrigerator magnets,” etc.)
- Classify materials according to whether they are or are not attracted by a magnet

***This unit contributes to meeting or exceeding the following Next Generation Science Standards: Standards noted with an asterisk (\*) are those that incorporate engineering and design***

***K-PS2-1. Plan and conduct an investigation to compare **the effects of different strengths or different directions of pushes and pulls** on the motion of an object.***

***K-PS2-2. Analyze data to determine if a design solution works as intended to **change the speed or direction of an object with a push or a pull**.*\***

***K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how **the shape of an object helps it function as needed** to solve a given problem.***

**Rationale:**

This Kindergarten unit explicitly introduces the core idea of [PS2.A](#): Forces & Motion, as students explore how “objects pull or push each other when they collide or are connected.” Students also investigate the effects of different strengths and directions of pushes and pulls relative to the speed/direction of an object’s motion (DCI [PS3.C](#)). For example, they can explore how changing the motion of toy cars and/or small balls can solve a problem. This unit also contributes directly to the early progression of [PS2.B](#), Types of Interactions and Contact Forces, and provides early, concrete experiences with magnets, which will be explored in more scientific detail in Grades 2 and 4.

The suggested culminating activity for this unit also offers students an opportunity to meet or exceed the engineering standard, [K-2-ETS1-2](#), when students develop and discuss a simple representation of how to solve a problem based on the shape of an object.

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards***

***2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.***

***2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.\****

**Rationale:**

Students continue the early progression of [PS1.A](#), started in Unit 5: *Taking Care of the Earth*, as they classify materials according to whether they are or are not attracted by a magnet. In future grades, this progression will continue in G1 U5: Matter & Its Properties; Grade 1 Unit 6: *Introduction to Electricity* (re: conductive versus nonconductive materials); Grade 2 Unit 4: *Magnetism* (re: naturally occurring lodestones versus manufactured magnets); and will then be applied in Grade 2 Unit 5: *Simple Machines* during an engineering design challenge.

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

**POTENTIAL CCSS Math Connections**

[MP.2](#) Reason abstractly and quantitatively. (K-PS2-1)

[K.MD.A.1](#) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)

[K.MD.A.2](#) Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K-PS2-1)

**Core Knowledge Sequence Guidelines**

Mathematics: Patterns & Classification—Establish concepts of likeness and difference by classifying and sorting objects according to various attributes; define a set by a common property of its elements, and; in a given set, indicate which item does not belong.

#### POTENTIAL CCSS ELA Connections

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)

#### Prior Knowledge

##### **Core Knowledge Preschool Sequence**

Scientific Reasoning and the Physical World

**Goal:** Demonstrate an initial understanding of the elements of the material world.

- **Level II:** Observe, describe, and record the effects of magnets on various objects and other magnets.

**Core Knowledge Science** (previously taught Kindergarten units)

##### **Unit 5: Taking Care of the Earth**

- Classify objects as recyclable or as garbage (*i.e., this objective supports the growing understanding of the core idea PS1.A, as students continue to classify materials according to observable properties*).

#### What Students Will Learn in Future Grades

##### **Core Knowledge Sequence**

###### **Grade 2 Simple Machines**

- Types of simple machines (e.g., wheel-and-axle, gears: wheels with teeth and notches, how gears work, and familiar uses, such as in bicycles)
- Friction, and ways to reduce friction (lubricants, rollers, etc.)

###### **Grade 2 Magnetism**

- Magnetism demonstrates that there are forces we cannot see that act upon objects.
- Most magnets *contain* iron.
- Lodestones: naturally occurring magnets
- Magnetic poles: north-seeking and south-seeking poles
- Magnetic field (strongest at the poles)
- Law of magnetic attraction: unlike poles attract, like poles repel
- The earth behaves as if it were a huge magnet: north and south magnetic poles (near, but not the same as, geographic North Pole and South Pole)
- Orienteering: use of a magnetized needle in a compass, which will always point to the north

**Grade 4 Electricity**

- Conductors versus insulators
- Electromagnets: how they work and common uses

**Core Vocabulary**

The following list contains the Core Vocabulary words suggested for purposeful integration across this Kindergarten unit. **Boldfaced** terms can be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

**Pushes and Pulls**

push, pull, touch, press, force, **interaction**, connected, tied to, rope, string, wire, **balance**, lever, weight, **cause**, **effect**, strength, size, strong, weak, more, less, direction, way, left, right, up, down, sideways, angle, **motion**, movement, slide, roll, move, fall, slip, at rest, motionless, still, unmoved

**Changes in Motion**

**collide**, crash, hit, propel, bounce, strike, change, alter, divert, different, happen, **accelerate**, quick, slow, speed up, slow down, stop, start, friction, contraption, tool, **device**, **model**, drawing, picture, representation, **engineer**

**Introduction to Magnets**

magnet, magnetism, magnetic, **phenomenon**, invisible, **property**, ability, field, **attract**, **repel**, hold, stuck, pole, north, south, **material**, metal, filings, iron, nickel, cobalt

**Classifying Objects with Magnets**

classification, **classify**, sort, **matter**, **characteristic**, attribute, size, shape, color, set, group, same, alike, **common**, different, unlike, familiar, everyday, objects, type, paper clip, staple, coin, [other everyday objects attracted to magnets]

## Potential Misconceptions

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

**Misconception: “Forces only occur when motion is changed,” or “Only moving objects have forces acting on them.”**

Students of all ages can fail to recognize that objects at rest experience forces. Activities and discussions using a leveled balance or lever can help to demonstrate that forces exist when motion does not.

**Misconception: “Objects in motion within a curved tube/path will continue to curve when the object exits the tube/path.”**

Students of all ages may believe that a track or path will influence an object’s motion even after the track ends (Mayer, 2007; McClosky, Caramaza, & Green, 1980). When an object exits the curved path, the force exerted by the path is removed, so the object will actually continue in a *straight line*. To explore this concept with early elementary students, Page Keeley offers a formative assessment probe, the “Marble Roll,” in her book *Uncovering Student Ideas in Primary Science* (page 71, 2013).

**Misconception: “A large magnet is stronger than a small magnet.”**

Young students often think a larger magnet will have a larger effect, using a “more of A, so more of B” logic (Keely, 2013). Teachers should be aware of the examples used during instruction, using small, strong magnets as well as larger, weak magnets to draw attention to the differences in size and strength of the forces.

**Misconception: “Magnetism is a type of gravity.”**

Students of all ages may think that gravity and magnetism are related and “interchangeable” terms (AAAS, Volume 2, page 26, 2007). In later grades, for example in CK Science, Grade 2 Unit 4: *Magnetism*, teachers should be especially aware of this misconception when exploring the ideas of orienteering using compasses and the early study of earth’s magnetic field.

**Misconception: “Magnets don’t work where there is no air.”**

Similar to misunderstandings about gravity, some students believe that magnetism is observable on earth, but not in space. This may be related to misunderstandings of gravity and magnetism as “interchangeable.” (Arons, 1997; Driver et al, 1994)

**Key Points for Instruction:**

Children need to develop the language tools to describe motion appropriately prior to developing an understanding of the principals of motion (Driver, Squires, Rushworth, and Wood-Robinson, 1994). It is highly recommended that teachers scaffold and promote vocabulary development during this unit, using strategies such as Word Walls (Keely, 2013).

Elementary students are usually familiar with the behavior of magnets, but they may not explain that behavior in terms of forces (i.e., they may not recognize that a magnet moving or sticking to an object is the effect of a push or pull). (AAAS, Volume 2, page 26, 2007)

## Potential Objectives for This Kindergarten Unit

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

### Beginning

- Predict how pushes and pulls affect objects.
- Describe what happens when objects touch.
- Identify whether the force between two objects is a push or a pull.
- Describe the direction of a push or pull.
- Apply your knowledge of forces to balance a lever.

### Middle

- Compare the strength of force applied to reach different distances.
- Describe the term ‘motion.’
- Identify what causes a change in motion.
- Predict what will happen when two objects collide and push on each other.

### End

- Describe different ways magnets are used in everyday life.
- Describe the term ‘attract.’
- Classify materials according to whether they are or are not attracted by a magnet.
- Describe the term ‘repel.’
- Apply your knowledge of forces and magnets to solve a problem.

## Potential Big Guiding Questions

### Essential Questions:

- **Can you predict what will happen when objects touch or collide?**
- **Where can we find magnets in our classroom?**
- **What kinds of objects are attracted to a magnet?**

### RE: Pushes and pulls

- What is keeping this object at rest?
- How are pushing and pulling similar/different?
- How can you balance this lever?
- What happens when a stronger/weaker force is applied to an object?
- What happens when a force is applied in a different direction?
- How might you push/pull this object to our target?



RE: Magnets

- Can you predict what will be attracted to a magnet?
- What is the difference between the terms ‘attract’ and ‘repel’?
- Can you solve a problem using your knowledge of forces and magnets?

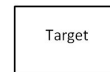
### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the assessment should take place.*

#### **Culminating Performance Assessment: Applying Pushes & Pulls (End of Unit 6; also see Potential Activity, Example #1)**

##### **Advance Preparation:**

- You will need to provide students with the following materials:
  - A small ball
  - A barrier (e.g., set of blocks or books)
  - A large flat target (e.g., piece of paper or paper plate)
  - A starting position (e.g., paper circle or star)
  - An array of child-friendly materials that students can use to help direct the ball to hit the target (e.g., a toy car ramp, large blocks, lincoln logs, bins/containers, etc.)
  - Paper on which students can draw model representations of their “contraptions” and illustrate how the contraptions will help the ball to hit the target
- Tape the starting position and target on the floor or large table. Place a small “barrier” in between the two (see sample diagram above at right).



**Task Assessment:** Challenge your students to be engineers and inventors in this culminating performance task. Explain that they will draw a model illustrating how their contraptions can be used to direct the ball to hit the target. This task assessment will be completed across two days.

##### **Day 1:**

Have students sit around the table or area where you have placed the objects (i.e., starting position, barrier, and target). Describe to students that you have a simple problem for them to solve and that they will be engineers as they help you to find a variety of solutions.

**T—I want to push this ball so that it rolls and hits this target. Do you think I will be able to do that?** After providing students with thirty to sixty seconds of think-time, ask them to share their thoughts. Students should conclude that one would not be able to do this because of the barrier between the ball and the target. Model what happens when one pushes the ball toward the target.

**T—What happened?** Students should describe the event of the ball bouncing off the barrier.

**T—Do you think if I change the amount of force I apply, I can make the ball hit the target?** In response to students who say, “Yes,” ask, **How much force do you think I should apply?** (Encourage students to use descriptors such as lighter, weaker, less, strong, heavy, or hard). Turning to students who say “No,” ask, **Why don’t you think I can hit the target by applying a weaker or stronger force?** Prepare to demonstrate what happens when the ball is rolled toward the barrier with greater/weaker force (based on student feedback). If you are applying a greater force, you may wish to have all students move to the side of the table/floor by the target, to avoid anyone being hit by the ball when it bounces off the barrier. Roll the ball, and discuss why a greater/weaker force will not be an effective way to reach the target behind the barrier.

**T—If we can’t get through the barrier, how can we reach the target?** Through questioning, help students arrive at the idea that they can reach the target by finding a way around or over the barrier.

Display an assortment of materials from your classroom that students can work with (e.g., a toy car ramp, large blocks, bins/containers, etc.).

**T—You are going to choose from these materials to build a “contraption” that will help our ball to reach the target. What are two ways that the ball could reach the target?** If students suggest that the ball could move over the barrier, say, **Since we can only roll the ball, we will need to build or use something that can roll the ball over the barrier.** You may want to model some non-examples and demonstrate some ideas that will not work, such as building stairs with blocks, so that students understand that to move the ball over the barrier, they will need a smooth surface. If students suggest moving the ball around the barrier, ask, **Can the ball be rolled on a curved surface? Think about what you could build to help get the ball to the target if you rolled it to the side.** Be sure to ask students to use words learned in this unit regarding direction and strength of forces, as well as those regarding changes in motion.

Ask students to return to their individual seats, and pass out paper to them. Explain that they will each draw a picture model that illustrates how to use material(s) to solve the problem (i.e., to help the ball reach the target). Remind students that they can only roll the ball, and leave the starting point, barrier, target, and materials visible as they work. Rotate around the room, and ask students to describe their models, making note of keywords or phrases used by each student. Ask how much force they would apply to the ball, in which direction, and why. Encourage students to think about the relationship between their contraption’s shape and their solution (e.g., a ramp is slanted to help carry the ball over the barrier). If possible at the end of the day, photocopy their picture models so you have a copy of their first drafts.

### **Day 2:**

Explain to students that you would like them to share their models from Day 1 with one or two partners. Encourage students to tell their partners how they think their contraptions will help the ball hit the target. Remind students to use descriptions of the amount of force they think is needed and in which direction. As students share, walk around the room, making note of their ideas. Identify at least two to three models that you believe will solve the problem when tested and, while students continue to discuss, gather the materials that these students will need to build their contraption.

One at a time, ask these two or three students to share their picture models with the class. Assist (or encourage several other students to assist) each student with building/positioning his or her contraption

as the model is described. Once built, have students stand around the starting point, barrier, and target. (**Safety Note:** As students test their models, it may be best to move other students back a safe distance so they are not accidentally struck by the ball.) As each child tests his or her model, ask him or her to describe the amount of force he or she is applying, the direction of that force, and why. For example: “**Why wouldn’t you want to apply a very strong force when rolling the ball up the ramp?**” or “**Why wouldn’t you apply a weak force when rolling your ball toward the wall you made out of building logs?**”

After the two to three demonstrations, ask students to return to their seats and to compare their own picture models with what they have just seen.

**T—A part of an engineer’s job is finding ways to improve her or his original model. Look at the model you drew yesterday. Think about what your classmates just showed us, and how you can change your model to solve our problem in a better way. It can be a big change or a small change. For example, do you think using different materials would be better? Or, do you think you can make your drawing better with more details?**

Give students a minute to think about what they should do. After signaling that they can begin drawing, rotate around the room, asking students to describe how and why they are adjusting their models. If some students wish to create very different models compared with their original drafts, it may be helpful to provide them with another piece of paper.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

#### **Example #1: (Middle of Unit 6)**

**{Objective:** Compare the strength of force applied to reach different distances.}

#### **Advance Preparation:**

- This activity requires direct teacher supervision of a small group. It is most effective when used as a station or part of a series of small group activities.
- Provide two targets (e.g., small hoops, plastic cups, or paper plates) that are labeled ‘A’ and ‘B’ that you will use to mimic a mini golf game.
- Provide a small ball (e.g., a plastic or foam ball). One to two extra balls may help facilitate the activity as well.
- Provide one object that can be used to push the ball toward a target (e.g., a toy golf club or any child-safe object that can be used to propel the ball toward the targets). **Safety Note:** It is

recommended that only one toy golf club or other object is used and that it is monitored closely by the teacher as groups rotate to complete this activity.

- In a relatively open area of your classroom, set the targets in two locations at different distances (in approximately the same direction). Depending upon your classroom space, you may wish to complete this activity in an alternate location, such as outdoors or in a gymnasium.
- Identify a good “starting position” from which you believe students will be able to successfully hit a ball onto/into each target. Be sure that the targets are at different distances so that your students can discuss differences in the amount of force needed to successfully hit their target.
- Before conducting this activity, consider any extenuating circumstances that may require adjustments in order for students to successfully and safely complete the activity.

**Activity:** Through this activity, students will investigate and discuss the concept of “bigger” and “smaller” forces through concrete experiences.

Explain to students that they will work as part of a small group to propel a ball to hit two targets. [**Safety Note:** It is recommended that the teacher sets ground rules for how the toy golf club or other object is to be used safely and that the teacher closely monitors the student attempting to hit the ball towards the targets.] Identify the first target (‘A’ or ‘B’), and ask a volunteer from the group to aim the ball and hit it. If the student hits the target, ask him or her to describe the force he or she applied. If he or she misses the target, ask the group to describe what could be done next time to hit the target from the starting position (e.g., apply more/less or stronger/weaker force). (If applicable, you can also discuss the direction of the force, however, help students to address the amount of force and the direction each separately.) In addition, looking at the ball’s new position, you may ask the group to think about the amount of force that would need to be applied since the ball is now closer to or further from the target. When aiming for the second target, ask group members to predict whether more or less force should be applied to hit it and to explain their prediction. After a different child from the group attempts to hit this target, ask the students if their predictions were correct. You can add a layer of challenge by asking students to compare the forces they used to push the object to “hit the mark” when aiming at target ‘A’ versus target ‘B.’

Time permitting, consider extending this activity by setting the targets in opposite directions but at the same distance. Engage students in a conversation about applying a push force in different directions.

### Example #2: (End of Unit 6)

{**Objective:** Classify materials according to whether they are or are not attracted by a magnet.}

#### Advance Preparation:

- Prepare your room so that students will have easy access to various objects that are and are not attracted to a magnet. For example be sure that classroom supplies, such as paper, pencils, toys, paper clips, coins, etc., are accessible for students to complete a small-group “scavenger hunt” around your room. Their goal will be to collect six items, in groups of two to three, including three items that are attracted to magnets and three that are not.

- Ensure that you have enough child-safe magnets, one for each student, so that all students can participate and demonstrate their reasoning through nonverbal responses, as you also probe for verbal answers to your questions.

**Activity:** Ask students to share what they have learned about magnets so far (e.g., ways that magnets are used in everyday life and/or a working definition of the term “attract” that was developed in an earlier lesson). Then, invite your students to participate in a “magnetic scavenger hunt” for items around your classroom. Their goal, in groups of two to three students, is to collect at least three objects that are attracted to a magnet as well as three objects that are not. **[Safety Note:** It is recommended that the teacher sets ground rules for behavior during the scavenger hunt. For example, that all students should walk and be courteous of others and that groups should stay together while searching for items around the room.] Before starting the scavenger hunt, provide time for all groups to brainstorm ideas of what they might collect to meet your challenge, for example, using the Think-Pair-Share protocol. Give student groups thirty to sixty seconds to discuss possible objects that they could collect, and then provide all students with a child-safe magnet. Also ask your students to think about the following question as they complete the hunt: “How will I know whether an object is attracted to a magnet or not?” Setting a time limit, such as three to five minutes, invite each group to collect a variety of classroom objects that match your challenge.

Periodically provide students with a time check, letting them know, for example, that they have two minutes left to complete the challenge, etc. When the time limit is up, ask students to sit with their groups at tables or on the carpet. Provide at least two to three more minutes for students to organize their items and to come to a consensus about why each item fits your challenge/criteria.

Then, ask each group to pair with another set of students to share what they found and to discuss why it fits your challenge. (Hint: to spur productive listening, consider asking your students to share what the partner group found before sharing what they found themselves.) Rotate through the groups as they share, probing for more information about what they were thinking about each object and why (e.g., “How do you know that this item is/isn’t attracted to a magnet?”). When groups are finished sharing, ask for volunteers to share another group’s examples first and then to share their own.

### Websites & Media

**PBS Kids—Sid the Science Kid’s Balancing Game:** <http://pbskids.org/sid/balancingact.html>

Consider using this interactive game to introduce or support your discussion of balances, levers, and the forces that objects exert/experience even when they are at rest.

### How Stuff Works:

The web pages below can help you to enhance your background knowledge of magnets and magnetism. They may also be useful for teaching about magnets during future domains, such as astronomy, geology, and matter.

- **Magnets** <http://science.howstuffworks.com/magnet.htm>
- **Compasses** (*Foreshadowing Grade 2*)  
<http://adventure.howstuffworks.com/outdoor-activities/hiking/compass.htm>
- **Stuff to Blow Your Kid's Mind: Magnets** (*Foreshadowing Grades 1, 2, and 4*)  
<http://shows.howstuffworks.com/stuff-to-blow-your-mind/51304-stuff-to-blow-your-kids-mind-magnets-video.htm>

### Supplemental Trade Books

- *What Magnets Can Do*, by Allan Fowler (Children's Book Publisher, 1995) ISBN 051646034X
- *What Makes a Magnet*, by Franklyn Branley and True Kelley (HarperCollins, 1996) ISBN 0064451488

*Recommended by the National Science Teachers Association:*

- *Magnetic and Nonmagnetic* (My World of Science), by Angela Royston (Heinemann Educational Books, 2003) ISBN 140343168X
- **Teacher Reference:** *Stop Faking It! Force & Motion*, by William C. Robertson (NSTA Press, 2002) ISBN 9780873552097

Core Knowledge Science Program—Domain Map

Science Content

- A biography of Wilbur and Orville Wright (engineers who solved the problem of powered flight)
- Engineers use the design process to solve problems:
  - Defining the problem
  - Possible Solutions
  - Plans & Models

*Foreshadowed for future learning:*

- Engineering investigations and testing
- Comparing multiple solutions
- Revisions and optimizing the design solution

**This unit contributes to meeting or exceeding the following Next Generation Science Standards:**  
*Standards noted with an asterisk (\*) are those that incorporate engineering and design*

**K-2-ETS1-1**. Ask questions, make observations, and gather information about a situation people want to change to define a simple **problem that can be solved through the development of a new or improved object or tool**.\*

**Rationale:**

This unit will introduce the core idea central to this standard, [ETS1.A](#) (Defining Engineering Problems), through the study of two brothers and their creation of the Wright Flyer, the first airplane to sustain powered flight.

**This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:**

**K-2-ETS1-2**. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.\*

**Rationale:**

The core idea, [ETS1.B](#) (Designing Possible Solutions), was introduced during earlier units in Kindergarten (e.g., Unit 6 *Pushes & Pulls*) and will be applied again during design challenges in later grades, such as in Grade 1 Unit 6 *Introduction to Electricity* and Grade 2 Unit 5 *Simple Machines*.

**K-2-ETS1-3**. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.\*

[ETS1.C](#) (Optimizing the Design Solution) will be introduced and explicitly modeled during Grade 1 units so that students can begin to independently apply this idea during Grade 2 learning. Teachers may foreshadow this idea if/when they summarize different solutions to a single design problem.

### Potential Skills & Cross-Curricular Integrations

The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.

#### POTENTIAL CCSS Math Connections (all apply to NGSS K-2-ETS1-1)

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

K.MD.A Describe and compare measurable attributes.

K.MD.B Classify objects and count the number of objects in each category.

#### POTENTIAL CCSS ELA Connections (all apply to NGSS K-2-ETS1-1)

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

W.K.6 With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.K.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

### Prior Knowledge

#### Core Knowledge Preschool Sequence

Scientific Reasoning and the Physical World

**Goals:** Select and use tools; and Demonstrate use of the scientific reasoning cycle.

##### Level II

- Select and use an appropriate tool to complete a task (e.g., to join paper, dig a hole, water a plant, etc.).
- Demonstrate use of the scientific reasoning cycle.

**Core Knowledge Science** (Previously taught Kindergarten units)

#### Unit 3 Plants & Farms

- Describe how George Washington Carver used plants to meet people's needs.

#### Unit 4 Seasons & Weather

- Describe why weather forecasts are important when the weather is expected to be severe.
- Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.



**Unit 6 Pushes, Pulls, and an Introduction to Magnets**

- Identify whether the force between two objects is a push or a pull.
- Describe the direction of a push or pull (using terms such as “left,” “right,” “up,” and “down”).
- Describe different ways magnets are used in everyday life (for example, in toys, in cabinet locks, in “refrigerator magnets,” etc.).

**What Students Will Learn in Future Grades****Core Knowledge Sequence****Grade 2 Simple Machines**

- Types of simple machines (e.g., wheel-and-axle, gears: wheels with teeth and notches, how gears work, and familiar uses such as bicycles)
- Friction, and ways to reduce friction (lubricants, rollers, etc.)

**Biographies of Other Engineers**

- Grade 1—Thomas Edison (invented an electric light bulb)
- Grade 2—Anton van Leeuwenhoek (invented a microscope) and Elijah McCoy (invented an automatic lubricator)
- Grade 3—Alexander Graham Bell (invented a telephone)
- Grade 4—Michael Faraday (chemist and physicist whose work led to the development of the electric motor and electric generator)
- Grade 6—Lewis Howard Latimer ((worked with Alexander Graham Bell on drawings of Bell’s invention, the telephone; and improved Thomas Edison’s light bulb)
- Grade 8—Charles Steinmetz (scientist who made key advances in electric power)

**Engineering Design**

- Students will also learn more about and apply additional steps of the engineering design process in future grades, such as:
  - Engineering investigations/testing
  - Comparing multiple solutions
  - Revisions to and optimizing the design solution

### Core Vocabulary

The following list contains the Core Vocabulary words suggested for purposeful integration across this Kindergarten unit. **Boldfaced** terms can be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program \(CKLA\)](#). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

#### The Wright Brothers

bicycle, bike, shop, store, rent, sell, glide, wind, tunnel, kite, **glider**, idea, power, **engine**, motion, fly, **flight**, **design**, study, create, develop, build, machine, tool, invention, **mechanical**, manufacture, improve, fix, important, newspaper, example

#### Engineering and Design

**engineer**, **problem**, question, ask, define, science, apply, knowledge, **research**, study, **investigate**, experiment, solve, solution, tinker, try, design, improve, optimize, **model**, draw, sketch, **communicate**, demonstrate, criteria, goal, target, success

#### Airplanes

plane, **airplane**, jet, **lift**, **force**, push, pull, travel, structure, **function**, front, back, sides, wing, tail, **rudder**, **propeller**, blade, flap, cockpit, pilot, buckle, window, **control**, steer, wheel, landing, skid, drag, stop

### Potential Misconceptions

Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.

**Misconception: “Air is weightless.”**

Understanding that air is a material that surrounds us and takes up space is a target for upper elementary students (AAAS, Vol.2, 2007). However, even high school students have been shown to have difficulty recognizing that air has weight and mass (Sere, 1985; Krnel, Watson, & Glazar, 1998). Students of all ages may describe that air only exerts force or pressure when it is moving and only in a downward direction (Driver et. al., 1994; Henricks, 2002).

**Key points for instruction:**

Lift, the force that allows an aircraft to fly, is [more complex](#) than most people realize. Many diagrams—even in encyclopedias, textbooks, and websites—are overgeneralized and misleading because they focus on only one of the many factors that produce the force of lift (NASA, 2015). Teachers should be sure to plan their instructional language carefully, with a clear understanding of the grade-level objectives for their students. For example, this Kindergarten unit intentionally focuses on the basic parts of an airplane and the history of the Wright brothers, and does not attempt to answer the question, “What makes an airplane fly?”

**Potential Objectives for this Kindergarten Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Identify the problem that the Wright brothers wanted to solve
- Identify the basic parts of an airplane
- Describe the purpose of an airplane’s tail and rudder
- Describe the purpose of an airplane’s propeller
- Compare and contrast the actions of gliding and flying
- Draw a model of a new airplane using what you know about parts of an airplane (foreshadowing (K-2-ETS1-2)
- Describe why engineers use models and drawings

**End**

- Describe how scientists ask questions and solve problems (K-2-ETS1-1)
- Identify problems that can be solved by engineers (K-2-ETS1-1)
- Describe a new problem that could be solved by engineers (K-2-ETS1-1)
- Identify possible solutions to a selected problem
- Develop a model that illustrates a solution to a selected problem (K-2-ETS1-2)
- Using a model, describe a solution to a selected problem

### Potential Big Guiding Questions

#### Essential Questions:

- How do the inventions of the Wright brothers affect our lives today?
- How do engineers solve problems?
- How do engineers know when they have solved a problem?

#### Other possible questions:

- What is the difference between gliding and flying?
- Why did the Wright Flyer need a propellor?
- What is the purpose of the rudder on an airplane?
- Why do engineers use drawings and models?
- What other problems could be solved through engineering?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS are noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the assessment should take place.*

#### Example #1: (Beginning of Unit 7)

**{Evaluates Student Mastery of Objective:** *Draw a model of a new airplane using what you know about parts of an airplane.*}

Invite your students to design and draw a new airplane using what they have learned about the parts of all planes. To provide up-front support, consider asking students to name the parts of an airplane that help it to fly (e.g., wings, engine, propeller, rudder, steering wheel/stick, etc.). Ask your students to draw a model of a new airplane, using their knowledge *and* imagination. Circulate throughout the room in order to annotate their drawn models with keywords or phrases as they identify the critical parts. To challenge students, consider asking them to recall what specific parts the Wright brothers improved/created to enable flight (i.e., engine, propeller, and rudder). For added support/scaffolding, consider reading or rereading key sections of the biography of the Wright Brothers found in [What Your Kindergartener Needs to Know](#) (page 379) or using one of the supplemental trade books found on page 9 of this unit map. Ask students to describe how their new planes will be “powered” and which characteristics of their planes will help to control the plane during flight, continuing to annotate their drawings as they respond. Student-drawn pictures of their designs will provide an experience to which students can connect as they discuss the importance of models and designs during the engineering process (*foreshadowing* K-2-ETS1-2).

**Culminating Performance Assessment: Engineering Design Challenge (End of Unit 7)****{Evaluates Student Mastery of Objectives:**

- Describe a new problem that could be solved by engineers. (K-2-ETS1-1)
- Identify possible solutions to a selected problem.
- Develop a model that illustrates a solution to a selected problem. (K-2-ETS1-2)
- Using a model, describe a solution to a selected problem.}

**Task Assessment:** Challenge your students to be engineers in this culminating performance task. This task assessment will be completed over the course of four days. On Day 1, students are presented with a series of problems (e.g., “How can we make sure our classroom plants receive enough water and sunlight while indoors?” “How can we reduce the amount of trash we create?”, etc.) that directly relate to content presented in previous units. Students select the problem they wish to solve, and on Day 2, identify possible solutions. On Day 3, students develop models that illustrate how the problem can be solved, and on Day 4, students describe their models to the class.

**Potential Activities & Procedures**

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate approximately when the activity should be conducted during this unit. Aligned NGSS are noted in parentheses.*

**Example #1: (Beginning of Unit 7)**

**{Contributes to the Objective:** *Identify the problem that the Wright brothers wanted to solve.*}

As an introduction to the accomplishments of the Wright Brothers, discuss what your students already know about airplanes and flight. Invite them to think about how people traveled before airplanes were invented. Explain that it could take weeks by train or ship to travel the distances that people today can travel in just a few hours. Encourage your students to imagine what a long trip across the ocean or across the entire United States might have been like.

**Example #2: (End of Unit 7 )**

**{Contributes to the Objective:** *Describe how scientists ask questions and solve problems.*}

**Advance Preparation:** This activity makes use of Core Knowledge Instructional Master #34, which is available as part of the [Kindergarten Teacher Handbook](#); prepare one copy for each student. The instructional master is used in conjunction with a world map/globe and an extended discussion of the questions/problems that Jane Goodall, George W. Carver, and the Wright brothers answered and/or attempted to solve. Using six large sentence strips or your board/projector, write the following information in two columns for whole-group use later in the lesson:

- 1) Jane Goodall
  - 2) George Washington Carver
  - 3) Wilbur and Orville Wright
- a) “Can we build a tool that helps us to fly?”
  - b) “How do chimps behave in the wild?”
  - c) “How many uses are there for peanuts?”

Using a world map or globe, help students make connections among all the individuals studied across the year and where she or he worked (i.e., Jane Goodall in Kenya, George Washington Carver in the southeast United States, and the Wright brothers in Kitty Hawk, North Carolina). With guidance and support, ask your students to recall what each of these individuals did to contribute to science or engineering, noting student ideas on the board or chart paper. As you review each scientist/inventor, note where she or he worked, using sticky notes or pushpins on the map or globe. Ask your students to think about what makes each place important; for example, Carver lived in the southeastern United States, studying agricultural problems in that region; Goodall studied chimpanzees found in Kenya; and the Wright brothers used the windy dunes of Kitty Hawk to test their airplane.

Then, using Instructional Master #34, ask your students to use what they know about these individuals to independently match their images with representations of their contributions. (*You may find it useful to reread short passages from each of the biographies used in Units 2, 3, and 7 in order to transition to and support this task, recalling details such as: the Wright brothers owned a bike shop; and Jane Goodall had a beloved stuffed animal chimp as a child.*) Rotate around the room, probing students’ thinking about who each image represents and how they know this. As students finish, ask them to pair with a partner to discuss, “Which of these individuals was an engineer?”

As you rotate around the classroom, or as a final question for the whole group, consider challenging your students with the following question: “Why do scientists ask questions or create tools to solve problems?” As students answer, probe for additional examples of questions and problems that can be addressed through science and engineering.

### Websites & Media

#### Smithsonian National Air & Space Museum—The Wright Flyer:

[http://airandspace.si.edu/collections/artifact.cfm?object=nasm\\_A19610048000](http://airandspace.si.edu/collections/artifact.cfm?object=nasm_A19610048000)

The National Air & Space Museum offers pictures and in-depth descriptions of the world’s first airplane. Visit this online exhibit, and learn more about the steering mechanism that Wilbur and Orville designed and about how they established the basic tenets of modern aeronautical engineering.

**Library of Congress—Photographs of the Wright Brothers:**

<https://www.loc.gov/photos/?q=wright+brothers>

Browse through more than three hundred negatives of Wilbur and Orville Wright, and of their collaborators, in these archival collections of images.

**How Stuff Works:**

- **Airplanes**—<http://science.howstuffworks.com/transport/flight/modern/airplanes.htm>
- **Classic Airplanes**—  
<http://science.howstuffworks.com/transport/flight/classic/classic-airplanes.htm>

Build your background knowledge of modern and classic airplanes as you read websites such as those above. These pages also offer a concise description of how airplanes developed across the twentieth century.

**PBS Kids—Sid the Science Kid’s “Let’s Fly”:** <http://pbskids.org/sid/letsfly.html>

Consider using this game as your students review the basic parts of an airplane, including wings, tail/rudder, and propellers.

**Supplemental Trade Books**

- *50 American Heroes Every Kid Should Meet*, by Dennis Denenberg and Lorraine Roscoe (The Millbrook Press, 2002) ISBN 0761316450 [Contains profiles of Wilbur and Orville Wright, as well as of George Washington Carver]
- *First Flight: The Story of Tom Tate and the Wright Brothers*, by George Shea and Don Bolognese (Scott Foresman, 2003) ISBN 0064442152 [Fictional account of a boy who helped the Wright brothers build their first glider.]
- *The Wright Brothers* (Famous People in Transportation), by Lola Schaefer (Pebble Books, 2000) ISBN 0736805494
- *Airborne: A Photobiography of Wilbur and Orville Wright*, by Mary Collins (National Geographic, 2003) ISBN 0792269578
- *The Wright Brothers: How They Invented the Airplane*, by Russell Freedman (Holiday House, 1994) ISBN 082341082X

**Core Knowledge Science Program—Domain Map**

**Science Content**

**Body Systems**

- *Review and extension from Kindergarten:* Offspring are very much (but not exactly) like their parents.
- Skeletal system: skeleton, bones, skull
- Muscular system: muscles
- Digestive system: mouth, stomach
- Circulatory system: heart and blood
- Nervous system: brain, nerves

*[Each body system will be studied in greater detail across Grades 2–6]*

**Preventing Illness**

- *Review and extension from Kindergarten:* Most animal babies need to be fed and cared for by their parents; human babies are especially in need of care when young.
- Taking care of your body: exercise, cleanliness, healthy foods, rest
- A biography of Louis Pasteur
- Vaccinations
- A biography of Edward Jenner

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***1-LS3-1.*** Make observations to construct an evidence-based account that **young plants and animals are like, but not exactly like, their parents.**

***Rationale:***

This unit will extend previous learning from Kindergarten relative to core ideas [LS3.A](#) and [LS3.B](#), which were started in Unit 2 *Animals & Their Needs* and Unit 3 *Plants & Farms* in that earlier grade. Grade 1 students will build knowledge of body systems that all humans share, while reviewing that many other traits can vary from person to person. These core ideas will be extended further during Unit 4 *Living Things & Their Environments*, also in Grade 1.

***1-LS1-2.*** Read texts and use media to determine **patterns in behavior of parents and offspring that help offspring survive.**

As above, this unit will build from the foundations laid in Kindergarten units to address **1-LS1-2**. The core idea central to this standard, [LS1.B](#), will be explored in this unit with examples and patterns of how human parents care for their children. This also provides students with an opportunity to explore the engineering concept, [ETS2.B](#), as they learn about vaccinations, the



|  |  |
|--|--|
|  | <p>biography of Edward Jenner, and how parents use knowledge of germs/disease to keep their children safe. LS1.B (Growth and Development of Organisms) will be further extended to include patterns of behavior among other animals during Unit 4 <i>Living Things &amp; Their Environments</i>.</p> |
|--|--|

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

*Standards noted with an asterisk (\*) are those that incorporate engineering and design*

|  |  |
|--|--|
| <p><b><i>1-LS1-1.</i></b> Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*</p> | <p><b>Rationale:</b></p> <p>The core ideas central to <b>1-LS1-1</b>, <a href="#">LS1.A</a> and <a href="#">LS1.D</a>, were explicitly introduced in Kindergarten during Unit 1 <i>The Human Body: Basic Needs &amp; Five Senses</i>. These ideas can be integrated and reviewed during this unit—for example, during the study of the nervous system—in order to prepare students to meet or exceed this standard. These ideas will be explicitly integrated into the Unit 4 <i>Living Things &amp; Their Environments</i> when students explore the idea that living things live in places to which they are particularly suited.</p>                                    |
| <p><b><i>1-PS4-4.</i></b> Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.*</p>                                    | <p>Continuing the study of LS1.A and LS1.D also directly supports a growing understanding of DCI <a href="#">PS4.C</a> (Information Technologies &amp; Instrumentation), which begins its progression with the idea that, “People use their senses to learn about the world around them. Their eyes detect light, their ears detect sound, and they can feel vibrations by touch” (<i>Framework</i>, page 137). The standard <b>1-PS4-4</b> can be foreshadowed as you provide an overview of how your units will connect across the year, applying what they learn about the human body later during their study of light, sound, and the biography of Thomas Edison.</p> |

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

#### POTENTIAL CCSS Math Connections

MP.2 Reason abstractly and quantitatively. (1-LS3-1)

MP.5 Use appropriate tools strategically. (1-LS3-1)

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)

#### POTENTIAL CCSS ELA Connections

RI.1.1 Ask and answer questions about key details in a text. (1-LS3-1 & 1-LS1-2)

RI.1.2 Identify the main topic and retell key details of a text. (1-LS1-2)

RI.1.10 With prompting and support, read informational texts appropriately complex for grade. (1-LS1-2)

W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS3-1)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)

#### POTENTIAL Cross-Curricular Connections

##### Potential Links:

**ELA:** Sayings & Phrases—“An apple a day keeps the doctor away”

[review from Kindergarten] “Better safe than sorry”

**Music:** Songs—“Dry Bones”

### Prior Knowledge

#### **Core Knowledge Kindergarten Sequence**

- Five senses and the associated body parts:
  - Sight: eyes
  - Hearing: ears
  - Smell: nose
  - Taste: tongue
  - Touch: skin
- Basic needs and taking care of your body:
  - Healthy foods and water
  - Air
  - Shelter and clothing
  - Rest
  - Cleanliness
  - Exercise

#### **CKLA Kindergarten**

##### **Domain Anthology, *The Five Senses***

- Identify and describe the five senses: sight, hearing, smell, taste, and touch
- Identify the body parts associated with the five senses
- Provide simple explanations about how the eyes, ears, nose, tongue, and skin work
- Describe how the five senses help people learn about the world
- Describe some ways people take care of their bodies
- Describe some ways the five senses help protect people from harm
- Describe the experiences and challenges of someone who is blind or deaf
- Explain the contributions of Ray Charles
- Explain the contributions of Helen Keller

#### **Core Knowledge Science** (Previously taught units in the CK Science program)

##### **Grade K Unit 1 *The Human Body: Basic Needs & Five Senses***

- Distinguish between needs and wants
- Identify the basic needs of human beings
- Identify habits that keep our bodies healthy (K-LS1-1)
- Describe how we can keep our bodies safe from germs
- Describe how we can take care of our bodies
- Identify which organs allow us to see, hear, smell, taste, and touch
- Describe how the sense of sight helps us learn
- Describe how the pupils in our eyes change in bright light compared to little light
- Describe how the sense of hearing helps us learn
- Describe how the sense of hearing helps keep us safe from harm (1-LS1-1)
- Identify devices that support people with limited vision and/or hearing

- Describe how the sense of smell helps us learn
- Classify scents as sweet or sour
- Describe how the sense of taste helps us learn
- Identify another sense that can also help us taste
- Classify foods as tasting sweet, salty, bitter, or sour
- Describe how the sense of touch helps us learn
- Describe how the sense of touch keeps us safe from harm (1-LS1-1)

### CKLA Grade 1 Objectives

*The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

#### **Domain Anthology, *The Human Body***

- Explain that the human body is a network of systems
- Identify the skeletal, muscular, digestive, circulatory, and nervous systems
- Recall basic facts about the skeletal, muscular, digestive, circulatory, and nervous systems
- Define the heart as a muscle that never stops working
- Explain the importance of exercise and a balanced diet for bodily health
- Identify the brain as the body's control center
- Explain that germs can cause disease in the body
- Explain the importance of vaccination in preventing disease
- Identify Edward Jenner as the man who developed the first vaccine
- Identify Louis Pasteur as the man who discovered pasteurization
- Explain the importance of exercise, cleanliness, a balanced diet, and rest for bodily health
- Explain the importance of regular checkups
- Explain the importance of vaccination in preventing disease
- Explain that the food pyramid is one way to depict a balanced diet
- Identify the component food groups in a balanced diet

### What Students Will Learn in Future Grades

#### **Core Knowledge Sequence**

##### **Grade 2 *The Human Body***

- Cells, Digestive and Excretory Systems, and a Healthy Diet

##### **Grade 3 *The Human Body***

- The Muscular, Skeletal, and Nervous Systems
- How the Eyes and Ears Work

**Grade 4 *The Human Body***

- The Circulatory and Respiratory Systems

**Grade 5 *The Human Body***

- Changes in Human Adolescence

**Core Vocabulary**

The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

**Body Systems**

network, **system**, **function**, process, survive, structure, trait, **specialized**, cell, tissue, organ, body, human, person, everyone, most, shape, skeleton, skull, bone, spine, **vertebrae**, support, rib, hip, finger, hand, knuckle, toe, foot, calcium, fracture, break, cast, X-ray, joint, muscle, tendon, bicep, tricep, **contract**, relax, **voluntary**, lift, strong, work, move, stretch, sprain, digest, saliva, teeth, gland, enzyme, catalyst, acid, break down, swallow, esophagus, stomach, intestine, **absorb**, energy, chemical, heart, chamber, artery, vein, blood, vessel, pulse, beat, pump, **circulate**, cardiac, aorta, plasma, platelet, cut, clot, scab, respond, sense, brain, nerves, **signal**, message, spinal cord, **receptor**

**Germ and Disease**

harmful, virus, bacteria, germ, disease, bug, sick, **symptom**, cough, sneeze, flu, cold, stuffy, sniffle, runny, tissue, ache, fever, **temperature**, thermometer, **infection**, infect, unhealthy, weak, rash, swollen, smallpox, cowpox, chickenpox, spread, pasteurization

**Preventing illness**

helpful, healthy, habits, exercise, **balanced diet**, nutrient, nutritious, vitamin, junk food, clean, wash, bathe, shower, bathroom, scrub, soap, sanitizer, sleep, rest, sometimes, often, reduce, **prevent**, safe, medicine, pill, shot, **vaccine**, **immunity**, doctor, medical, hospital, office, appointment, checkup, exam, examine, test, stethoscope, better, heal, recover

### Potential Misconceptions

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

**Misconception: “The body systems operate separately from each other.”**

This idea can be inadvertently emphasized by instruction that does not carefully probe for student ideas about the relationships between systems in the body. For example, the linear timeline of a unit may focus on how a system is supported by those previously studied, but teachers should be sure to explore student thinking about the reciprocal and interconnected nature of the body as a whole.

**Misconception: “Energy is a substance in food.” or “Food turns into energy in your body.”**

Chemical reactions during the process of digestion and cellular respiration release stored chemical energy in food. Teachers should be mindful of how they describe the process of digestion because overgeneralizations, like the misconceptions above, are common in everyday speech. The definition of energy is complex (e.g., read the *Framework’s* core ideas [PS3.A–D](#)) and the scientific definitions of chemical energy and stored energy are reserved for study in middle and high school grades. The goal for this early grade is to introduce key terms and ideas about the digestive system and its parts relative to [LS1.A](#) (Structure and Function). It is recommended that Grade 1 teachers refer to food as a source of energy and that energy is released when food is digested.

**Misconception: “The brain controls only our voluntary/conscious movements and actions.”**

The human brain has been linked to many involuntary functions in the body (e.g., regulation of temperature, production of hormones, etc.). Upper elementary students have been shown to identify the nervous system as being critical to sending messages to the brain, controlling activity, and stabilizing the body (Gellert, 1962), but Grade 5 students may not understand that the brain also has a critical role in our involuntary actions, such as regulating the pumping of the heart (Johnson & Wellman, 1982).

**Key points for instruction:**

Primary grade students may begin instruction with little knowledge of their internal organs and think that the contents of the body are only what they have seen going in or coming out of it—e.g., food and blood (Gellert, 1962).

When asked to locate the approximate position on a model or drawing of a human body, students of all ages have trouble identifying the location of organs such as the stomach, intestines, and/or liver (Blum, 1977). Teachers should be mindful of how they refer to and model the location of internal organs during discussions and investigations.

**Misconception: “Blood leaves your vessels and enters other parts of your body.”**

Lower elementary students often know about circulation and of the blood’s relationship to breathing, but students (even into even upper elementary) may not recognize the complex pattern/path of the circulatory system and/or that the blood returns to the heart (Carey, 1985).

**Misconception: “Soap kills germs.”**

Hand soaps are “surfactants” that lower the surface tension between two or more substances. This is useful because, when applied to your hands and combined with water, soap makes it easier for the germs to detach from your skin and wash away down the sink. Hand *sanitizers*, on the other hand, work to break down proteins using alcohols that can kill bacteria. For more interesting misconceptions about cleanliness and germs, consider watching this fun Mental Floss video with Elliott Morgan: [10 Misconceptions about Germs and Hygiene](#).

**Key points for instruction, continued:**

It is important for teachers to remember that the nervous system—the brain in particular—plays an important role in all human senses. For example, the eye captures light from your surroundings, but it is the brain that processes this information. The importance of the brain relative to sight can be highlighted using optical illusions.

During research studies, fourth-graders have been shown to understand that the brain helps the body, but they do not always realize that body parts help the brain (Johnson & Wellman, 1982).

### Potential Objectives for this Grade 1 Unit

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

#### Beginning

- Distinguish between living and nonliving things
- Describe physical characteristics of living organisms (i.e., human beings, animals, and plants)
- Describe similarities and differences between young plants and animals and their parents  
[1-LS3-1]
- Describe how parents help their offspring survive [1-LS1-2]
- Compare and contrast the needs of human beings, animals, and plants

#### Middle

- Describe habits that keep our bodies safe from germs
- Define the term “vaccine”
- Describe how scientists help people stay healthy

- Define the term “system”
- Identify what muscles enable our bodies to do
- Describe how involuntary muscles help our body
- Identify the three main parts of the circulatory system
- Describe how our blood helps our bodies stay healthy
- Categorize activities that can keep our heart healthy

**End**

- Identify the types of foods that make up a healthy plate
- Describe the system that turns the food we eat into energy
- Explain why it’s important for us to eat nutritious foods
- Describe how our skeleton, bones, and skull help our body
- Identify unique characteristics of bones
- Explain why our brain is called the control center of our body
- Describe how our senses help us take in information from the environment

**Potential Big Guiding Questions**

**Essential Questions:**

- **How do your body parts work together to meet your needs?**
- **What do parents do to keep children safe?**
- **What makes up a balanced diet?**

RE: Body Systems

- How are you similar to/different from your parents?
- Which body parts are associated with the [skeletal, muscular, digestive, circulatory, nervous] system?
- How does your muscular system help you to breathe?
- Why do people wear a cast to help heal a broken bone?

RE: Germs, Disease, and Preventing Illness

- How long should I wash my hands before eating?
- What is the difference between hand soap and hand sanitizer?

RE: Healthy Diets

- How much “junk food” do you eat each week?
- Why are nutritious foods important during digestion?



### Potential Assessment Opportunities

The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.

#### Example #1: (Beginning of Unit 1)

{Evaluates Student Mastery of Objective: Describe similarities and differences between young plants and animals and their parents [1-LS3-1]}

##### Advance Preparation:

Images (or comparable replacements) of the following: small evergreen tree, fully grown evergreen tree, sunflower seedling, full grown sunflower, adult man or woman, infant, adult monkey, baby monkey, adult elephant, baby elephant

**Task Assessment:** Shuffle the images and then lay them out in front of a small group of students. Ask the students to group the images based on similarities. As the students group the images, ask them to explain their rationale (e.g., “This group is human beings, this group is animals, and this group is plants,” “This group has eyes and this group has no eyes,” etc.). Provide students with a few moments to closely look at the features of each living thing. Ask them to pair the images based on those which have very similar features. Once students have paired all the images (i.e., the small evergreen tree with the fully grown evergreen tree, the sunflower seedling with the full grown sunflower, the man or woman with the infant, the adult monkey with the baby monkey, and the adult elephant with the baby elephant), ask them to describe how each pair has similar features (for example, “How did you know these plants/animals should be grouped together?”).

**T - These** (pointing to each adult) **are the parents and these** (pointing to each young child/plant) **are their offspring. This monkey is the parent, and this monkey is her child. This seedling is the offspring of the sunflower.**

Ask the students to describe how the child (or young plant) looks different from the adult—how they know this animal or plant is the younger of the two. Encourage students to look for patterns between all of the young animals/plants. Ask similar questions about the adults, for example, “What patterns do you see that all of the parents seem to share?”

**T - Based on the patterns we observed, what can we say about the features of young plants or animals and their parents?**

#### Example #2: (End of Unit 1)

{Evaluates Student Mastery of Objective: “Describe how our senses help us take in information from the environment”}

##### Advance Preparation:

- Create the assessment handout by drawing a T-chart. On the left-hand side of the chart’s header, write “objects” and write “senses” on the right-hand side of the header. Below these headers,

create 2 rows for student responses and/or drawings. (You may wish to include sentence starters and/or visual cues in each row under “senses” [e.g., I see..., I hear..., I smell ..., I feel...].)

- Gather clip boards for each pair of students to support their writing/drawing as they move around the room.
- Identify 5–8 objects (approximately 1 object per 4 students) that children can examine with their senses. Label each object.
- Determine how partners will rotate from object to object (e.g., assign the objects, ask partners to walk up to an object and then rotate to the right for the second round, etc.). Ensure there is adequate space for two pairs of students to be focusing on the same object simultaneously.

**Task Assessment:** Explain to students that they will be examining objects using their senses. Draw their attention to objects in the classroom that you have labeled. Pass out the assessment handout (and clip board) and a writing utensil to each pair of students. Explain that each student will be working with a partner to examine two objects. Model how they will write the name of the objects and describe what they learn about the objects through their senses. **Safety Note:** Clarify that they will not be using the sense of taste during this task. Provide students with 3–5 minutes to examine and make note of what they learned about the objects using their senses.

After students have studied two objects, engage them in a discussion about what they learned through their senses.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction where it would be delivered. Aligned NGSS are noted in parentheses.*

#### Example #1: (End of Unit 1)

{**Contributes to the Objectives:** “Describe how our skeleton, bones, and skull help our bodies”}

#### Advance Preparation:

- Image or three-dimensional model of a skeleton (and playdough)
- Image of skeleton layered over organs (e.g., an image of the rib cage protecting your heart, lungs, etc.)
- Image of a bone
- Image of a skull

#### Activity:

Explain to students that you will be asking them to feel their wrists and hands and share what they notice. Model how to use your thumb and index finger to feel your wrist. Ask students to do the same.

**T - What do you notice about the feel of your wrist?**

Student responses may include “bumpy,” “hard,” “stiff,” “rigid,” or “solid.” If students need more support with describing how their wrists feel, provide them with choices (e.g., does it feel soft and squishy or hard and solid?), and/or props such as soft (e.g., plush ball) and hard (e.g., wooden block) objects to compare. Using your index finger, model how to move that finger across the surface of your wrist and top and bottom of your hand. Ask students to do the same.

**T - What do you notice about your hand? Tell the person sitting next to you how it feels.** Provide students with approximately 30–60 seconds to talk. Call on several partners to share and ask other students if they agree/disagree.

**T - What we are feeling are our bones.** (Display image of a bone.) **When we feel something hard under the surface of our skin, we are feeling a bone.**

**Do you think we have bones in other parts of our body (other than our hands and wrists)? Do you think we have many bones in our body? Why do you think we have many/few?** Through questioning, guide students to explain their reasoning.

Display an image or model of a skeleton. Explain to students that over 200 bones make up the skeleton.

**T - Take a close look at this skeleton and the many, many bones. How do you think these bones help us?** Provide students with 30 seconds to think about the question. Next, ask students to pair up and share their ideas with a partner. After (approximately) one minute, call on several groups of students to share their ideas. Note student ideas on chart paper.

Display images of a skull and a skeleton (layered over organs) and lead students in a discussion focused on how they think the skull and skeleton are helping the body. (If you have a 3-D model of a skeleton, place some playdough inside so students can concretely see how the bones provide protection to organs.)

### Example #2: (End of Unit 1)

{**Contributes to the Objectives:** “Describe how our senses help us take in information from the environment”}

#### Advance Preparation:

- Apple
- An apple slice for each student (Be sure to follow your school’s policy regarding food distribution and allergies.)

#### Activity:

Hold up an apple. Ask students to describe the apple to their partners. (Provide students approximately 2 minutes to talk.) Call on groups of students to share and capture their ideas on chart paper. Ask students to share how they learned that information (e.g., I saw it).

Pass out an apple slice to each student. Ask them to think about other ways they can learn information about the apple. Describe what students are doing as a means of encouraging others to do the same (e.g., Rashida is smelling her apple slice, Tommy is tasting his apple).

**T - What else did you learn about the apple?** Add ideas to chart paper. **How did you learn that information?** Students may add that they tasted, touched, and/or smelled the apple.

Review the characteristics identified by the class.

**T - We were able to identify many characteristics of an apple. We gathered that information by looking at it, smelling it, touching it, and even tasting it.** Guide students in connecting this experience with their previous knowledge of the senses from Kindergarten (Unit 1).

**T - Think about what we learned about the nervous system. How do you think these sense receptors helped us learn about these apples?** Guide students through a discussion that helps them arrive at a broad understanding that these receptors send messages to the brain.

### Websites & Media

**Visible Body—Free eBooks:** <http://go.visiblebody.com/vb-free-ebooks>

Visible Body offers a collection of interactive animation apps that are available for purchase, including [My Incredible Body](#) which is geared toward elementary students. This website also offers free eBooks and activities packed with images and amazing details about the human body.

**Choose My Plate:** <http://www.choosemyplate.gov/kids>

This website includes games, activities, videos, and songs that can build children’s understanding of the food groups and how to choose a nutritious diet.

### Supplemental Trade Books

- All About Scabs, by Genichiro Yagyu (Random House Adult Trade Publishing Group, 1998) ISBN 0916291820
- Eat Healthy, Feel Great, by William Sears, M.D., Martha Sears, R.N., and Christie Watts Kelly (Little, Brown and Company, 2002) ISBN 0316787086
- Eating Well (Looking After Me), by Liz Gogerly and Mike Gordon (Crabtree Publishing Company, 2009) ISBN 0778741176
- Exploring Health (A Sense of Science), by Claire Llewellyn (Sea-to-Sea Publications, 2009) ISBN 0749670444
- First Encyclopedia of the Human Body (Usborne Internet-Linked), by Fiona Chandler (Usborne Books, 2004) ISBN 079450695X
- Germs Make Me Sick!, by Melvin Berger (Scott Foresman, 1995) ISBN 0064451542
- Healthy Eating (Science Everywhere!), by Helen Orme (New Forest Press, 2010) ISBN 1848982895
- Healthy Eating, by Claire Llewellyn (QEB Publishing, 2006) ISBN 1845384725
- How Bodies Work (I Know That!), by Claire Llewellyn (Sea-to-Sea Publishing, 2007) ISBN 1597710237

- How to Stay Healthy (I Know That!), by Claire Llewellyn (Sea-to-Sea Publishing, 2007) ISBN 1597710245
- It's Catching: Colds, by Angela Royston (Heinemann, 2001) ISBN 1588102270
- Louis Pasteur, by Kremena Spengler (Capstone Press, 2003) ISBN 0736834419
- Me and My Amazing Body, by Joan Sweeney (Random House Children's Books, 1999) ISBN 0375806237
- My First Visit to the Doctor, by Eve Marleau and Michael Garton (QEB Publishing, 2009) ISBN 1595669876
- My Healthy Body, by Bobbie Kalman (Crabtree Publishing Company, 2010) ISBN 9780778794714
- Oh, the Things You Can Do That Are Good For You! by Tish Rabe and illustrated by Aristides Ruiz (Random House, Inc., 2001) ISBN 0375810986
- Showdown at the Food Pyramid, by Rex Barron (Penguin Young Readers Group, 2004) ISBN 0399237151
- The Busy Body Book, by Lizzy Rockwell (Random House Children's Books, 2008) ISBN 0553113747
- The Nervous System (Human Body Systems), by Helen Frost (Capstone Press, 2000) ISBN 0736806512
- The Digestive System (Human Body Systems), by Helen Frost (Capstone Press, 2000) ISBN 0736806490
- The Edible Pyramid, by Loreen Leedy (Holiday House, Inc., 2007) ISBN 0823420744
- The Human Body, by Gallimard Jeunesse and Sylvaine Peyrols (Scholastic Reference, 2007) ISBN 0439910889
- The Muscular System (Human Body Systems), by Helen Frost (Capstone Press, 2000) ISBN 0736806504
- The Circulatory System (Human Body Systems), by Helen Frost (Capstone Press, 2000) ISBN 0736887768
- The Skeletal System (Human Body Systems), by Helen Frost (Capstone Press, 2000). ISBN 0736806539
- Tiny Life on Your Body, by Christine Taylor-Butler (Children's Press, 2006) ISBN 0516254804
- Under Your Skin: Your Amazing Body, by Mick Manning (Albert Whitman & Company, 2007) ISBN 0807583138
- What Happens to a Hamburger? (Let's-Read-and-Find-Out Science, Stage 2), by Paul Showers and illustrated by Edward Miller (Harper Trophy, 2001) ISBN 0064451836
- Your Insides, by Joanna Cole (Price Stern Sloan, 1992) ISBN 0399221239

**Core Knowledge Science Program—Domain Map**

**Science Content**

- Sun: source of energy, light, heat
- The eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune  
*[Note: In 2006, Pluto was classified as a dwarf planet]*
- Stars:
  - Constellations, Big Dipper
  - The sun is a star
- Earth and its place in the solar system:
  - The shape of the earth, the horizon
  - The earth moves (revolves) around the sun; the sun does not move
  - The earth spins (rotates) on its axis; one rotation takes one day (24 hours)
  - Sunrise and sunset
  - When it is day where you are, it is night for people on the opposite side of the Earth
- The Moon
  - Phases of the moon: full, half, quarter, crescent, new

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.***

***Rationale:***

This unit will explicitly engage students with the disciplinary core idea [ESS1.A](#), which is central to this Grade 1 standard. Observable patterns of movement across the sky will be explored when studying constellations, the changing phases of the moon, and seasonal differences in the day-night cycle.

***1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.***

This unit will build on the Kindergarten introduction to the seasons and apply that learning to [DCI ESS1.B](#). In doing so, this will meet the K–2 grade band endpoint for this core idea which states, “Seasonal patterns of sunrise and sunset can be observed, described, and predicted.” This core idea will be extended in later grades during Grade 3 Unit 5 *Astronomy* and Grade 5 Unit 6 A *Biography of Galileo* in order to support students as they prepare for the [Grade 5 Topic Space Systems: Stars and the Solar System](#).

**This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:**

**1-PS4-2.** Make observations to construct an evidence-based account that states **objects in darkness can be seen only when illuminated.**

**1-PS4-3.** Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

**Rationale:**

[DCI PS4.B](#) (Electromagnetic Radiation), which is central to both **1-PS4-2** and **1-PS4-3**, is introduced in this unit as it engages students with the component idea that, “Very hot objects give off light (e.g., a fire, the sun).” (*Framework*, page 134) This core idea will be further developed during Unit 7 *Introduction to Light & Sound* as well as during Grade 3 Unit 3 *Light*. This Grade 1 unit also creates a solid foundation for the later development of [PS3.B](#) (Energy Transfer) and [LS2.B](#) (Energy Transfer in Ecosystems) with the idea that the sun’s energy is a source of heat and light for the Earth which travels over a significant distance. PS3.B will first be assessed by the NGSS during the [Grade 4 Topic Energy](#) and LS2.B is assessed during the [Grade 5 Matter & Energy in Organisms & Ecosystems](#). This early grade unit offers concrete experiences, coupled with previous learning about Plants and Animals, to foreshadow and connect to this future learning.

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

#### POTENTIAL CCSS Math Connections

[MP.2](#) Reason abstractly and quantitatively. (1-ESS1-2)

[MP.4](#) Model with mathematics. (1-ESS1-2)

[MP.5](#) Use appropriate tools strategically. (1-ESS1-2)

[1.OA.A.1](#) Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2)

1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)

**POTENTIAL** CCSS ELA Connections

W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1 and 1-ESS1-2)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1 and 1-ESS1-2)

**POTENTIAL** Cross-Curricular Connections

**Potential Links:**

**Geography:** Spatial Sense—Working with maps, globes, and other geographic tools

**Mathematics:** Recognize fractions as part of a whole:  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$  (with regards to the visible portions of the moon across its phases)

**ELA:** Poetry—“My Shadow” by Robert Louis Stevenson

When introducing the planets in our solar system, also consider foreshadowing the future study of Ancient Greek mythology and civilization, which will occur in Grade 2 English Language Arts (e.g., CKLA Domain Anthology, *Greek Myths*) and in Grade 2 History, Geography, Civics, and the Arts (e.g., the HGCA Unit *Ancient Greek Civilization & Sculpture*)

**Prior Knowledge**

**Core Knowledge Kindergarten Sequence**

**Season & Weather**

- The sun: source of light and warmth
- The four seasons and characteristic weather patterns during the different seasons
- Temperature: thermometers are used to measure temperature

**CKLA Kindergarten**

**Domain Anthology, Seasons & Weather**

- Demonstrate understanding of the following units of time and their relationship to one another: day, week, month, year
- Name the four seasons in cyclical order, as experienced in the United States, and correctly name a few characteristics of each season
- Characterize winter as generally the coldest season, summer as generally the warmest season, and spring and autumn as transitional seasons
- Name at least one month in a specific season while referring to a calendar



**Core Knowledge Science** (Previously taught units in the CK Science program)

**Kindergarten Unit 4 Seasons & Weather**

- Describe how the sun affects the temperature
- Describe how sunlight affects materials on Earth (K-PS3-1)

**CKLA Grade 1 Objectives**

*The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

**Domain Anthology, Astronomy**

- Recognize the sun in the sky
- Explain that the sun, moon, and stars are located in outer space
- Explain that the sun is a source of energy, light, and heat
- Classify the sun as a star
- Identify Earth as a planet and our home
- Identify the earth's rotation, or spin, as the cause of day and night
- Explain that other parts of the world experience nighttime while we have daytime
- Explain sunrise and sunset
- Explain that Earth orbits the sun
- Describe stars as large, although they appear small in the night sky
- Describe stars as hot, distant, and made of gas
- Explain that astronomers study the moon and stars using telescopes
- Describe how people sometimes tell stories about the moon and stars
- Explain what a constellation is
- Identify the Big Dipper and the North Star
- Identify the four phases of the moon—new, crescent, half, full
- Explain that the moon orbits the earth
- Explain that astronauts travel to outer space
- Describe the landing on the moon by American astronauts
- Explain the importance of the first trip to the moon
- Explain that our solar system includes the sun and the planets that orbit around it
- Indicate that there are eight planets in our solar system (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune)
- Classify Pluto as a dwarf planet

### What Students Will Learn in Future Grades

#### **Core Knowledge Sequence**

##### **Grade 2 Cycles in Nature**

###### **A. Seasonal Cycles**

- Earth's orbit around the sun and the four seasons
- Seasons and life processes

###### **B. The Water Cycle** *[A cycle powered by the sun]*

- Evaporation and condensation

##### **Grade 3 Astronomy**

- The “Big Bang” as one theory
- The universe: an expanse almost beyond imagining
- Galaxies: Milky Way and Andromeda
- Our solar system:
  - Sun: source of energy (heat and light)
  - The eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune *[and the dwarf planet Pluto]*
- Planetary motion—orbit and rotation:
  - How day and night on earth are caused by the earth's rotation
  - Sunrise in the east and sunset in the west
  - How the seasons are caused by the earth's orbit around the sun and the tilt of the earth's axis
- Gravity, gravitational pull:
  - Gravitational pull of the moon (and to a lesser degree, the sun) causes ocean tides on earth
  - Gravitational pull of “black holes” prevents even light from escaping
- Asteroids, meteors (“shooting stars”), comets, Halley's Comet
- How an eclipse happens
- Stars and constellations, Orienteering (finding your way) by using North Star, Big Dipper
- Exploration of space:
  - Observation through telescopes
  - Rockets and satellites: from unmanned to manned flights
  - Apollo 11, first landing on the moon: “One small step for a man, one giant leap for mankind.”
  - Space shuttle
- Biography of Copernicus (had new sun-centered idea about the solar system)
- Biography of Mae Jemison (astronaut and medical pioneer)

##### **Grade 4 Meteorology**

- The water cycle (review from Grade 2): evaporation, condensation, precipitation
- The atmosphere—how the sun and the earth heat the atmosphere

##### **Grade 5 Science Biographies**

- Biography of Galileo

##### **Grade 5 World History—The Reformation**

- Copernicus and Galileo: Conflicts between science and the church
- Ptolemaic (earth-centered) vs. sun-centered models of the universe

### Core Vocabulary

The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

#### Our Solar System

**system**, planet, moon, **orbit**, revolve, path, ellipse, elliptical, gravity, **celestial**, body, star, twinkle, shine, sun, solar, energy, light, heat, rays, shadow, [names of the eight planets], dwarf, pluto, rings, gas, giant, storm, rocky, frozen, inner, outer, space, expanse, void, universe, astronomy, astronomer, telescope, observatory, **constellation**, Big Dipper, star map, myth, asteroid, comet, meteor, debris, shooting/falling star, meteorite, launch, rocket, shuttle, **satellite**, Hubble, probe, lander, rover, space station, spacecraft, mission, technology

#### Earth’s Place in the Solar System

Earth, shape, **sphere**, globe, **horizon**, east, west, day, night, sunrise, sunset, dusk, dawn, **axis**, rotate, spin, side, opposite, dark, light, hour, month, year, **revolve**, motion, path, Moon, lunar, phase, visible, reflect, sunlight, moonlight, crater, full moon, half/quarter moon, crescent moon, new moon, calendar, observe, **investigate**, record, describe, explain, predict

### Potential Misconceptions

Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.

**Misconception: “The sun revolves around the Earth causing day and night.”**

Many students find it counter-intuitive that it is the Earth that moves (rotates/spins) to cause day and night, and not the sun. The sun’s apparent movement across the sky during the day can lead students to this common misconception. This concept can be a good opportunity for teachers and students to discuss the scope and timeframe of an investigation. That is, day-to-day observations of the sun from relatively the same location may not be enough to convince someone of the true relationship between the sun and the Earth. Instead, knowledge of time/daylight differences across the globe, discussions of the horizon and the shape of the Earth, and patterns of seasonal change in the day-night cycle can help to build correct understanding over time.

**Misconception: “The moon shines like the sun.”**

The light seen from the moon is actually sunlight that is reflected off of the moon’s surface. Consider probing your students’ thinking about this misconception when discussing the phases of the moon and the origins of “moonlight.” Grade 1 Unit 7 *An Introduction to Light & Sound* will help to reinforce and extend learning about the nature of light and the sun.

**Misconception: “The phases of the moon are caused by the shadow of the earth.”**

The waxing and waning of the moon are due to the positions of the Earth, moon, and sun relative to one another, but they are not caused by Earth’s shadow. Instead, **lunar eclipses** are caused by the shadow (umbra) of the Earth. Particularly useful to uncover this misconception are [photos of a Gibbous moon](#), which can be discussed relative to the spherical shape of the Earth and the shape of its shadow/umbra (i.e., the shadow of the Earth is not concave).

**Misconception: “The seasons are caused by the earth’s changing distance from the sun.”**

Students of all ages (including college and adult learners) have difficulty understanding and explaining the causes of the seasons. The root misconception behind this has been identified as a belief that the earth orbits the sun in an elongated elliptical path (Galili & Lavrik, 1998; Sadler, 1998). Other students, citing the tilt of the Earth on its axis, believe that the changing distance between a hemisphere and the sun is the cause of seasons (e.g., “summer occurs because our hemisphere is closer to the sun”). Teachers should be sure to understand that the distance to the sun changes relatively little, and that these minor changes cannot explain seasonal variations.

**Key points for instruction:**

It is recommended that students first master the idea that the Earth is spherical and that it rotates on its axis before they can be expected to explain the day-night cycle, the seasons, and the phases of the moon (Vosniadou, 1991). Also critical to these explanations is for students to have an understanding of the relative size, motion, and distance/orientation of the sun, moon, and Earth (Sadler, 1987). At this early grade level, students are not expected to explain the seasons or the cause of the phases of the moon. Instead, they will be focusing on the development of key terms and language that will support later discussions in upper elementary and middle school. Grade 1 students should investigate the shape of the Earth, its horizon, and the day-night cycle to develop early explanations of these specific phenomena.

### Potential Objectives for this Grade 1 Unit

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

#### Beginning

- Describe characteristics of the sun
- Describe how the sun affects living things on the Earth
- Describe characteristics of the Earth
- Using a model, demonstrate how the Earth spins
- Explain what causes day and night
- Examine patterns in order to identify the season (i.e., winter, spring, summer, fall) with the longest/shortest amount of daylight (1-ESS1-2)
- Describe the Earth’s orbit

#### Middle

- Describe characteristics of the moon
- Identify the four phases of the moon (1-ESS1-1)
- Describe characteristics of stars
- Explain what a constellation is
- Identify when the sun, moon, and stars are visible in the sky (1-ESS1-1)
- Predict where the sun, moon, and stars will appear in the sky at different times of day (1-ESS1-1)

#### End

- Describe characteristics of the planet Mars
- Compare characteristics of the planets Mercury and Venus to Earth
- Contrast characteristics of the planets Jupiter and Saturn to Earth
- Describe characteristics of the planets Uranus and Neptune
- Identify similar features among all eight planets

### Potential Big Guiding Questions

#### Essential Questions:

- **How does the shape of the Earth affect your everyday life?**
- **Can you predict how the objects in our sky move?**
- **How do the Earth, sun, and moon appear in space?**

RE: the Sun and Earth

- Why does the sun burn you?
- How does the sun bring life to our planet?

- Does the sun rise at the same time every day?
- Do we ever see the sun at nighttime?
- How can it be daytime in one part of the world and nighttime in another?
- What is a timezone?
- Why is it not a good idea to call a friend in Australia at noon?
- What causes the cycle of night and day?
- How long do you think it takes the Earth to complete one revolution?
- If you are \_\_\_ years old, how many times has the Earth revolved around the sun (in your lifetime)?
- How can the Earth be moving if we can't feel it?
- How are the sun and Earth alike? How are they different?

Re: The Moon and Stars

- Why can't you see the stars during the daytime?
- Can you see the moon during the day?
- Can a single star be a constellation?
- How can stars be large if they look so small in the sky?
- What makes the Moon appear to glow?
- How is the moon like the Earth? How is it different?

Re: The Eight Planets

- Could humans survive on Mars?
- What's it like inside the planet Jupiter?
- Why is Pluto not considered a planet anymore?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.*

#### **Example #1: (Beginning of Unit 2)**

**{Evaluates Student Mastery of Objectives:** “Using a model, demonstrate how the Earth spins” and “Explain what causes day and night”}

**Note:** This assessment can be used to after Potential Activity Example #1, described below, and/or with the [Grade 1 Model Lesson](#) that is based upon the Foundation’s [Meaningful Instruction](#) professional development training.

**Advance Preparation:**

- Styrofoam ball for each student (or each pair of students)
- Toothpick for each student or pair (Note: Toothpicks need to be long enough to go through the styrofoam ball and model the axis of the Earth)
- Markers for each student or pair
- A desk lamp

**Assessment Task:** Pairs of students will work together on this performance assessment to demonstrate and discuss a small model of Earth’s rotation. For each pair, direct students to mark a small “x” on the ball.

**T - We are going to imagine that this “x” represents where we are on the Earth.**

**T - We are going to pretend that the toothpick represents the Earth’s axis.** Model for students how to put the toothpick through the ball and how to hold their model Earth at a slight angle (approximately 23.5 degrees away from a vertical plane) to mimic the Earth’s tilt. Direct students to hold both ends of the toothpick and ask them to demonstrate how their Earth representation rotates on its axis. Encourage them to pay attention to the path of their location marked by the “x.”

**T - Talk to your partner about what you notice about the “x” as the Earth turns, as it rotates.**

**Why do you think it moves in that path?**

Place a small lamp in the middle of the table and give each student the opportunity to rotate their model in front of the lamp. (Consider turning off your classroom lights to better simulate day and night using these small models.)

Encourage students to talk about when it is daytime or nighttime based upon the “x” location in relation to the light from the lamp.

**T - How does our small model relate to the Earth and sun? If it is daytime here at our school, where the “x” is on our model, what time of day is it on the other side of the Earth? What causes day and night?**

**Potential Activities & Procedures**

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction it would be delivered. Aligned NGSS are noted in parentheses.*

**Example #1: (Beginning of Unit 2)**

{Contributes to the Objective: “Explain what causes day and night”}

**Note:** This activity can be used in conjunction with the [Grade 1 Model Lesson](#) that is based upon the Foundation’s [Meaningful Instruction](#) professional development training.

**Advance Preparation:**

- A large globe (preferably attached to a stand, which replicates the Earth spinning on its axis)

- A bright lamp
- Sticker or Post-It note that can be affixed to your location on the globe

**Activity:** Begin with a discussion about how the Earth spins on its axis. Place a sticker on the globe so students can see where they live. (This will also assist students with following the path of movement as the globe rotates.) Slowly spin the globe and ask students to describe how the earth moves.

**T - What time of day is it now, daytime or nighttime? Do you think it's possible (at this very moment) in another part of the world for it to be nighttime?** (Provide students with time to think and then share ideas with a partner.) **We are going to learn today what causes day and night, and find out if it's possible for part of the world to be experiencing daytime while the other part of the world is experiencing nighttime.**

Turn all of the lights off with the exception of a lamp placed in the corner of the room

**T - What object in our solar system produces light like that lamp? In what ways is this lamp like the sun? Because of** (name common characteristics identified by students), **we are going to use this lamp as a model of the sun.**

Spin the globe so the sticker is facing the lamp. Point to that side of the globe

**T - What do you notice about this side of the globe?** (Student responses may include, "It's bright," "Light is shining on it.") **What time of day do you think it would be for people living on this side of the Earth? Why?** (Students should conclude that it is daytime since light from the sun can be seen during the day.)

Point to the other side of the globe.

**T - What about over here? What time of day do you think it is for people living here?** (Students should infer that it is nighttime because the sun light is not reaching that part of the Earth.

Ask students to focus on their location (the sticker). Slowly rotate the globe and then pause. Each time ask students to indicate whether it is daytime or nighttime, and how they know. As students demonstrate understanding, ask them questions that challenge their thinking:

**T - Look where** (\_country/continent on opposite side of world\_) **is on our globe relative to our model.**

**Would it be a good idea to call a friend who lives in that country/continent right now? Why or why not?**

**T - How could we find out what time of day it is in that country/continent at this very moment?**

(Encourage students to think of tools or technologies that might help them to find out what time it is on the opposite side of the Earth.)

**T - What about** (\_country/continent in the same hemisphere\_)? **Could we call a friend that lives here right now? Why or why not?**

### Example #2: (Middle of Unit 2)

{**Contributes to the Objective:** "Identify when the sun, moon, and stars are visible in the sky" and "Predict where the sun, moon, and stars will appear in the sky at different times of day"} (1-ESS1-1)

#### Advance Preparation:

- Draw a diagram of your school building (landscape view) and surrounding property (e.g., playground, field, etc.)
- Gather clipboards as well as yellow and gray crayons for each student (or pair of students)



- Obtain a compass (if possible provide one for each student or pair of students)
- Create a T-chart to be used as the Homework Activity Handout. On the left side, write “moon” and write “stars” on the right side. In the directions, ask students to draw an image of the “moon” and “stars” and write a description. If students have access to a compass at home, ask that they note the location of the moon (i.e., northern, southern, eastern, or western sky)

**Activity:** Explain to students that they will be tracking the sun’s location over several days. (**Safety Note:** Before engaging in this activity, explain to students that they **should not** look directly at the sun.) Provide each student (or pair of students) with a diagram of your school, a clipboard, and a yellow crayon. In the morning, walk out to the school yard and locate the sun. Ask students to mark the location on their diagram (e.g., draw the sun with the yellow crayon and write ‘M’ or “A.M.” to label it, or draw the sun and write the time below, etc.). Using the compass identify, ask students to identify the location of the sun and label the diagram (i.e., ‘E’ for east or ‘NE’ for northeast). Repeat this process at approximately noontime and again at the end of the school day.

You may wish to extend this activity to include observations of the moon during the daytime if/when it is visible. (To help identify when/where the moon may be visible to you during the day, consider using this webpage: <http://www.timeanddate.com/astronomy/moon/light.html>.) During the activity it is important remind students of safety (e.g., not to look directly at the sun) and you may wish to have students put their hand up to block the sun so they do not accidentally look at it while scanning the sky for the moon. When they locate the moon, each student can draw an image on their landscape diagram with a gray crayon and use the compass to identify its orientation in the sky. If the conditions are not optimal, you may wish to have the students only complete their observations at night as part of a homework assignment.

**Homework Activity:** Ask students to observe the moon and stars at night.

This task involves each student drawing a picture of the moon (e.g., the phase), using a compass (if available) to identify its orientation in the sky, and writing a phrase or several sentences to describe what they have seen. Students should also draw several images of stars they view in the sky and write a brief description.

After students collect data about what appears in the sky during the day and at night as well as the general locations of these celestial bodies in the sky over time, engage students in a discussion about their findings.

**T - What could we observe in the sky during the day?**

**T - Why do you think we couldn’t see the stars during the day?**

**T - (If you didn’t see the moon) Have you ever seen the moon during the daytime?**

**T - How did the sun’s location change during the day?**

**T - Where do you think we will find the sun in the sky tomorrow morning? Where do you expect it to be at the end of the school day tomorrow?**

**T - Do you think we will be able to see the sun/moon/stars again tomorrow? When (morning or night)?** Repeat this activity over the course of several days in order for students to observe patterns in the sun’s and moon’s location.

## Websites &amp; Media

**NASA' Space Place:** <http://spaceplace.nasa.gov/>

During this unit, consider reviewing NASA's Space Place sections on the [Sun](#) and the [Solar System](#). These pages have excellent information to help answer questions that you might hear from your students such as, "Why does the sun burn you?" and "What's it like inside Jupiter?"

**NASA Kid's Club:** <http://www.nasa.gov/audience/forkids/kidsclub/flash/index.html>

This website is full of kid-friendly information and games, including information about the current crew aboard the International Space Station and about future plans for possible manned missions to Mars.

**PBS Kids—Ready Jet Go! Clips with Astronaut Amy:** <http://pbskids.org/readyjetgo/video.html>

Clips from the astronomy-focused animated series, Ready Jet Go!, could be useful to review information learned during this domain-based unit. Particularly, "Astronomer Amy" Mainzer offers excellent clips of real space exploration missions and concepts. Using clips from the fictional series itself, students can also learn and discuss ideas such as how the International Space Station stays in orbit without falling back to Earth and without flying out into space.

**Starry Night—Free Classroom Resources:**

[http://www.starrynighteducation.com/resources\\_free.html](http://www.starrynighteducation.com/resources_free.html)

Starry Night offers interactive simulations of astronomy and earth science concepts as part of an array of apps that are available for purchase. The website also offers free resources such as [free interactive sky charts](#) and the [audio pronunciation guide](#) to help you build confidence in naming celestial bodies.

**Weather Underground International Webcams:**

<https://www.wunderground.com/webcams/index.html?range=intl>

The Weather Underground network, which may have been introduced to your students by Kindergarten teachers during *Seasons & Weather* (Kindergarten Unit 4), offers live webcams of conditions around the U.S. and the world. Using two or more live webcams (e.g., in the U.S., Japan, Australia, etc.), consider having students make observations about and discuss the time of day in different parts of world.

### Supplemental Trade Books

- A Guide to the Planets, by Sue Whiting (National Geographic Society, 2004) ISBN 0792248171
- Blast Off! A Space Counting Book, by Norma Cole and illustrated by Marshall H. Peck (Charlesbridge, 1994) ISBN 088106498X
- Earth Cycles, by Michael Elsohn Ross and illustrated by Gustav Moore (Millbrook Press, 2003) ISBN 0761319778
- Find the Constellations, by H. A. Rey (Houghton Mifflin Books for Children, 2008) ISBN 054713178X
- Going Around the Sun: Some Planetary Fun, by Marianne Berkes (Dawn Publications, 2008) ISBN 158469100X
- How Much is a Million? 20th Anniversary Edition, by David M. Schwartz and illustrated by Steven Kellogg (HarperCollins, 2004) ISBN 0688099335
- If You Decide to Go to the Moon, by Faith McNulty and illustrated by Steven Kellogg (Scholastic Press, 2005) ISBN 0590483595
- Me and My Place in Space, by Joan Sweeney and illustrated by Annette Cable (Crown Publishers, 1998) ISBN 0517709686
- Midnight on the Moon (Magic Tree House, No. 8), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1996) ISBN 0679863745
- My Book of Space, by Ian Graham (Kingfisher, 2001) ISBN 0753453991
- Once Upon a Starry Night: A Book of Constellations, by Jacqueline Mitton and illustrated by Christina Balit (National Geographic Children's Books, 2009) ISBN 1426303912
- Our Solar System, by Seymour Simon (Collins, 2007) ISBN 0061140082
- Planets: A Solar System Stickerbook, by Ellen Hasbrouck and illustrated by Scott McDougall (Little Simon, 2001) ISBN 068984414X
- Reaching for the Moon, by Buzz Aldrin and illustrated by Wendell Minor (Collins, 2008) ISBN 0060554479
- Solar System: The Best Start in Science (Science Everywhere!), by Helen Orme (New Forest Press, 2010) ISBN 1848982925
- Space: A Nonfiction Companion to Midnight on the Moon, by Will Osborne and Mary Pope Osborne (Random House Books for Young Readers, 2002) ISBN 037581356X
- Stargazers, by Gail Gibbons (Holiday House, 1999) ISBN 0823415074
- Sun Up, Sun Down, by Gail Gibbons (Voyager Books, 1987) ISBN 015282782X
- The Big Dipper, by Franklyn M. Branley and illustrated by Molly Coxe (HarperCollins, 1991) ISBN 0064451003
- The Magic School Bus: Lost in the Solar System, by Joanna Cole and illustrated by Bruce Degen (Scholastic Inc., 1990) ISBN 0590414291
- The Moon Seems to Change, by Franklyn M. Branley and illustrated by Barbara and Ed Emberley (HarperCollins, 1987) ISBN 0064450651
- The Night Sky, by Felix James (National Geographic Society, 2001) ISBN 0792289552
- The Sun is My Favorite Star, by Frank Asch (Voyager Books, 2000) ISBN 0152063978
- The Sun, by Anita Garmon (National Geographic Society, 2002) ISBN 0792285093

- There's No Place Like Space! All About Our Solar System, by Tish Rabe and illustrated by Aristedes Ruiz (Random House Inc., 1999) ISBN 0679891153
- What Makes Day and Night, by Franklyn M. Branley and illustrated by Arthur Dorros (HarperCollins, 1986) ISBN 0064450503
- What the Moon is Like (Let's-Read-and-Find-Out-Science, Stage 2), by Franklyn M. Branley and illustrated by True Kelley (HarperCollins, 2000) ISBN 0064451852

Draft

Core Knowledge Science Program—Domain Map

Science Content

**Geographical features of the Earth’s surface**

- The shape of the earth, the horizon
- Oceans and continents
- North Pole and South Pole, equator

**Inside the Earth**

- What’s inside the Earth:  
 Layers: crust, mantle, core  
 High temperatures
- Volcanoes and geysers
- Rocks and minerals:  
 Characteristics of different kinds of rocks: metamorphic, igneous, sedimentary  
 Introduction to the formation of different kinds of rocks  
 Important minerals in the Earth (such as quartz, gold, sulfur, coal, diamond, iron ore)  
 Introduction to the composition of soil

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.***

***Rationale:***

This unit will explicitly build upon learning that was started in the previous Unit 2 *Astronomy*, which directly addresses the concept of patterns in the day-night cycle as suggested by **1-ESS1-2**. This Unit 3 will continue the progression of students’ understanding of **ESS1.B** (Earth and the Solar System) by extending learning about the shape of the Earth and its features, such as the North and South Poles and the Equator.

***2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.***

As students build their knowledge of geography and geology content, such as the oceans, continents, volcanoes, and geysers, they will be explicitly preparing to meet this Grade 2 standard as they develop and use maps of the Earth. At the center of this particular standard is the early grade band endpoint for **DCI ESS2.B** (Plate Tectonics & Large-scale Systems), which will be extended in Grade 4 Unit 4 *Geology* to help prepare students for the NGSS [Grade 4 Topic Earth’s Systems](#).

**2-ESS2-3.** Obtain information to **identify where water is found on Earth** and that it can be solid or liquid.

**Rationale:**

This unit—coupled with the later Grade 1 units *Living Things & Their Environments* (Unit 4 re: water habitats) and *Matter* (Unit 5 re: different states of matter, using water as an example)—will directly support the core idea [ESS2.C](#) (Roles of Water in Earth’s Surface Processes). Students also have the opportunity to learn about water’s importance and prevalence on Earth’s surface during Grade 2 Unit 1 *Cycles in Nature* when students will review where they can find water and explore the concept that most of Earth’s surface is covered in water. This core idea will be investigated during that unit while expanding their knowledge to include early study of the water cycle.

**This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:**

**2-ESS1-1.** Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

**Rationale:**

This unit offers the opportunity to introduce and/or foreshadow the core idea central to this standard, [ESS1.C](#) (History of the Earth), as students begin to investigate the process of how rocks are formed. New learning about rocks, volcanoes, and even geysers can be compared and contrasted against the timescale/cycles of phenomena studied during previous units (e.g., the day-night cycle as well as the seasons). This approach directly relates to the early learning progression for ESS1.C which states, “Some events on Earth occur in cycles, like day and night, and others have a beginning and an end, like a volcanic eruption” (*Framework*, page 178). **2-ESS1-1** will also be explicitly addressed during Grade 2 Unit 1 *Cycles in Nature*.

**5-ESS2-1.** Develop a model using an example to **describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.**

**4-ESS3-1.** Obtain and combine information to **describe that energy and fuels are derived from natural resources and their uses affect the environment.**

**Rationale:**

An early introduction to the process of rock formation offers the opportunity to foreshadow [DCI ESS2.A](#) (Earth Materials & Systems) which is an excellent example of how Earth's systems interact (e.g., the geosphere, hydrosphere, and atmosphere). This unit also offers an excellent opportunity to connect the study of important minerals and foreshadow additional learning about [ESS3.A](#) (Natural Resources), which was introduced in Kindergarten within units such as Unit 5 *Taking Care of the Earth*. These core ideas will also be explicitly extended during the study of oceans in Unit 4 *Living Things & Their Environments*, as well as in Grade 4 Unit 4 *Geology*, Unit 5 *Meteorology*, and Grade 5 Unit 7 *Matter & Change*.

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen their understanding of this domain.*

#### POTENTIAL CCSS Math Connections

[MP.2](#) Reason abstractly and quantitatively. (1-ESS1-2 & 2-ESS2-2)

[MP.4](#) Model with mathematics. (1-ESS1-2 & 2-ESS2-2)

[MP.5](#) Use appropriate tools strategically. (1-ESS1-2)

[1.OA.A.1](#) Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2)

[1.MD.C.4](#) Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many are in each category, and how many more or less are in one category than in another. (1-ESS1-2)

[1.NBT.B](#) Understand place value. (2-ESS2-2)

**POTENTIAL CCSS ELA Connections**

SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. (2-ESS2-2)

W.1.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS2-3)

W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-2)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-2 & 2-ESS2-3)

**POTENTIAL Cross-Curricular Connections****Potential Links:**

**Geography:** Spatial Sense—Working with maps, globes, and other geographic tools

**Mathematics:** Geometry—Know and use terms of orientation and relative position, such as: *around, on, under, over, far from, near, in front, in back (behind), above, below, between, in the middle of to the right of, to the left of, next to, beside, here, there, inside, outside, closed, open*  
Shapes—identify and describe solid shapes (i.e., characteristics of a sphere)

**Visual Arts:** Texture—Describe qualities of texture, for example: *rough, smooth, bumpy, scratchy, slippery, etc.*

**Prior Knowledge****Core Knowledge Kindergarten Sequence****Geography & An Overview of the Seven Continents**

- Maps and globes: what they represent, how we use them
- Rivers, lakes, and mountains: what they are and how they are represented on maps/globes
- Locate the Atlantic and Pacific Oceans
- Locate the North and South Poles
- Identify and locate the seven continents on a map and globe
- Name and locate the town, city, or community, as well as the state where you live
- Locate North America, the continental United States, Alaska, and Hawaii

**Core Knowledge Science** (Previously taught units in the CK Science program)**Kindergarten Unit 4 Seasons & Weather**

- Identify a tool that can be used to measure temperature
- Use thermometers to measure water and air temperature (ongoing)
- Predict when objects will have hotter and cooler temperatures
- Describe how the sun affects the temperature



**Kindergarten Unit 5 Taking Care of the Earth**

- Identify everyday objects that are made up of natural resources
- Describe how humans use the Earth's natural resources (K-ESS3-1)
- Identify common resources that are limited and nonrenewable
- Classify resources as renewable or nonrenewable
- Describe how humans have changed the environment around them in order to meet their needs (K-ESS3-2)

**Grade 1 Unit 2 Astronomy**

- Describe characteristics of the Earth
- Using a model, demonstrate how the Earth spins
- Explain what causes day and night

**CKLA Grade 1 Objectives**

The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).

**Domain Anthology, *The History of the Earth***

- Identify geographical features of the earth's surface: oceans and continents
- Locate the North Pole, the South Pole, and the equator on a globe
- Describe the shape of the earth
- Explain that much of our knowledge of the earth and its history is the result of the work of many scientists
- Identify the layers of the earth: crust, mantle, and core (outer and inner)
- Describe the crust
- Describe the mantle and core inside the earth
- Describe volcanoes and geysers
- Describe how heat, pressure, and time cause many changes inside the earth
- Identify common minerals in the earth
- Explain how minerals are used by people
- Identify the three types of rocks: igneous, sedimentary, and metamorphic
- Describe how heat, pressure, and time cause the formation of igneous, sedimentary, and metamorphic rocks
- Describe fossils
- Explain how fossils provide information about the history of the earth
- Explain how we know about dinosaurs
- Describe various dinosaurs

## What Students Will Learn in Future Grades

### **Core Knowledge Sequence**

#### **Grade 4 Geology: The Earth and Its Changes**

##### **Earth's Layers**

- Crust, mantle, core (outer core and inner core)
- Movement of crustal plates
- Earthquakes:
  - Faults, San Andreas fault
  - Measuring intensity: seismograph and Richter scale
  - Tsunamis
- Volcanoes:
  - Magma
  - Lava and lava flow
  - Active, dormant, or extinct
  - Famous volcanoes: Vesuvius, Krakatoa, Mount St. Helens
- Hot springs and geysers: Old Faithful (in Yellowstone National Park)
- Theories of how the continents and oceans were formed: Pangaea and continental drift

##### **How Mountains are Formed**

- Volcanic mountains, folded mountains, fault-block mountains, dome-shaped mountains
- Undersea mountain peaks and trenches (Mariana Trench)
- Major mountain ranges on different continents:
  - South America: Andes
  - North America: Rockies and Appalachians
  - Asia: Himalayas and Urals
  - Africa: Atlas Mountains
  - Europe: Alps
- High mountains of the world:
  - Asia: Everest
  - North America: McKinley
  - South America: Aconcagua
  - Europe: Mont Blanc
  - Africa: Kilimanjaro

##### **Rocks**

- Formation and characteristics of metamorphic, igneous, and sedimentary rocks

##### **Weathering and Erosion**

- Physical and chemical weathering
- Weathering and erosion by water, wind, and glaciers
- The formation of soil: topsoil, subsoil, bedrock

### Core Vocabulary

The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

#### Earth's Geographical Features

**surface**, exterior, shape, **horizon**, east, west, north, south, ocean, **continent**, Africa, Asia, Antarctica, Australia, Europe, North America, South America, equator, North/South Pole, water, land, liquid, solid, peninsula, harbor, bay, island, geology, **geologist**, geography, geographer, map, globe, **model**, picture, representation, volcano, molten, rock, lava, **magma**, heat, cool, **eruption**, destructive, Ring of Fire, geyser, plume, Old Faithful, Yellowstone

#### Inside the Earth

**interior**, inside, **layer**, section, crust, mantle, outer/inner core, liquid, solid, gas, pressure, **temperature**, heat, earthquake, seismic, **seismologist**, Richter Scale, measure, record, slip, fault, **natural hazard**

#### Rocks, Minerals, and Soil

**mineral**, rock, stone, boulder, gravel, pebble, sand, soil, dirt, peat, substance, material, **matter**, solid, particle, piece, characteristic, trace, gemstone, gem, diamond, jade, crystal, geode, artifact, igneous, metamorphic, sedimentary, **cycle**, sediment, erode, wash away, break down, **weather**, compress, squeeze, heat, melt, solidify, crystallize, debris, air bubble/pocket, **fossil**, preserve, impression, paleontologist, **excavate**, extinct, fossilized, **fossil record**, dinosaur, meteor, meteorite

### Potential Misconceptions

Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.

**Misconception: “The sun revolves around the Earth causing day and night.”**

As is to be introduced in Unit 2 *Astronomy*, this unit offers an extended opportunity for students to explore the shape of the Earth and the phenomenon of the horizon. Many students find it counter-intuitive that it is the Earth that moves (rotates/spins) to cause day and night, and not the sun. The sun’s apparent movement across the sky during the day can lead students to this common misconception. This concept can be a good opportunity for teachers and students to discuss the scope and timeframe of an investigation. That is, day-to-day observations of the sun from relatively the same location may not be enough to convince someone of the true relationship between the sun and the Earth. Instead, knowledge of time/daylight differences across the globe, discussions of the horizon and the shape of the Earth, and patterns of seasonal change in the day-night cycle can help to build a correct understanding over time.

**Misconception: “Bricks are rocks.”**

Bricks are created by humans using natural materials, and may *contain* rock, but they are not considered to be rock in geological terms. Geologically, rocks are naturally occurring inorganic substances with a definite chemical composition of minerals. Students have been shown to have trouble distinguishing naturally occurring objects from those created and/or altered by humans (Happs, 1985; Keeley, 2013). Student understanding of natural versus human-made things can be explored by offering students time to develop an operational definition of the term *rock* before introducing the scientific definition (Keeley, 2013).

**Misconception: “Soil is tiny pieces of rock.”**

This statement is an overgeneralization that omits a key ingredient of soil—living and once-living organisms. Soil is a mixture of both organic and inorganic matter such as bacteria, fungi, plant matter, minerals, and more. Researchers, such as Happs (1982), have found that the most common misconception regarding soil is that it is “just dirt” and that students do not understand the key roles that living organisms play in soil. Young children may think decaying plants and animals just disappear over time while some recognize that decaying matter fertilizes the soil, but do not understand that organic material becomes a part of the soil (Driver, et. al., 1994; Keeley, 2013). It is recommended that teachers help students to distinguish between the words *dirt* and *soil* (e.g., *dirt* is *soil* in places where humans do not want it). You may also help students understand soil by investigating various soils to observe the different mixtures and to discuss the component pieces of various samples (Keeley, 2013).

**Key points for instruction:**

Consider reading more about common misconceptions and key points for instruction offered by Ohio State University’s College of Education and Human Ecology: [Common Misconceptions about Rocks and Minerals](#). For example, “A major source of geologic misconceptions is the discrepancy between the use of geologic terms in everyday language versus scientific communication. In everyday usage, the term *rock* refers to a single, particular specimen; to a geologist, the term [*rock*] is used for a category of rock types. A single specimen, geologically speaking, is a *clast*.” The OSU project, *Beyond Penguins and Polar Bears*, is an excellent resource for teachers to learn more about misconceptions and broader implications for learning about a [variety of scientific topics](#).

**Misconception: “Earth’s mantle is liquid.”**

The Earth’s mantle is mostly solid rock. The misconception of a liquid mantle arises from expressions such as “tectonic plates sinking into the mantle” or “continental drift,” which implicitly refer to or are associated with liquid substances. The mantle is also described as “creeping” due to convection forces on a long-term timescale, which can strengthen the misconception of a liquid mantle without special instruction to avoid this misunderstanding. Student understanding of volcanoes is also likely to affect their descriptions of Earth’s interior. Many students may assume that, because what they see coming from the interior of the Earth is a liquid (i.e., lava), this represents what is generally found beneath the surface of our Earth. Teachers should consider learning more about [magma and how it is created](#) to help avoid misconceptions and overgeneralizations about Earth’s interior layers.

**Potential Objectives for this Grade 1 Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Describe the shape of the Earth
- Use a model to describe the Earth’s surface (ESS1.B)
- Locate the North Pole, South Pole, and equator on a globe
- Describe the weather and climate of different regions of the Earth
- Identify and describe landforms and bodies of water in our local area
- Develop a model that represents the landforms and bodies of water in our local area (2-EE2-2)

**Middle**

- Identify three layers of the Earth
- Develop a model that describes the Earth’s crust
- Describe the temperature of the Earth’s mantle and core
- Compare and contrast volcanoes and geysers
- Develop a model that describes the Earth’s mantle and core

**End**

- Describe how minerals are used in our everyday lives
- Describe how the minerals in soil help plants
- Sort rocks based on similar features
- Describe features of metamorphic, igneous, and sedimentary rocks
- Describe how metamorphic, igneous, and sedimentary rocks are formed
- Classify rocks as metamorphic, igneous, and sedimentary
- Describe how fossils tell us about the past

**Potential Big Guiding Questions****Essential Questions:**

- **How does the shape of the Earth affect your everyday life?**
- **What clues do volcanoes and geysers tell us about the interior of the Earth?**
- **What evidence do rocks and minerals offer us about the history of the Earth?**
- **Why is soil so important to living things?**

## RE: Features of the Earth

- Why can't you reach the horizon?
- How close is your school to the equator?
- How far away are the North and South Poles from your school?
- Are there rocks in the Arctic?

## RE: Inside the Earth

- Why can't you dig a hole to the other side of the Earth?
- What causes a volcano to erupt?
- Are there volcanoes on other planets?
- What causes geysers?

## RE: Rocks, Minerals, and Soil

- If all rocks contain minerals, why do they have different features?
- How do you use rocks and minerals in your everyday life?
- What is a cycle?
- Do all plants need soil to grow?
- How do fossils tell us about the past?

**Potential Assessment Opportunities**

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.*

**Example #1: (Beginning of Unit 3)**

{Evaluates Student Mastery of Objective: Use a model to describe the Earth's surface} (ESS1.B)

**Advance Preparation:**

- Provide each small group of students with a globe or map of the world. The models should clearly label oceans, the seven continents, and other large bodies of water (e.g., the Mediterranean Sea, the Nile River, etc.).
- Post-it Flags (2 colors per group). Prior to passing out the flags, it may be important to model how they should be used to mark an area on a globe/map (e.g., one Post-it Flag for the region of North America, one for the Atlantic Ocean, etc.)
- Anecdotal record sheet to capture student responses.

**Task Assessment:** Ask each group to take their (yellow) Post-It Flags and affix them to the land they see on the Earth's surface. As students mark their globes/maps, walk around the room and ask them questions, such as:

- **How do you know this is land and not water?**
- **What do you notice about this area of land (e.g., large/small, shape, surrounded by water, etc.)?**
- **What do you call these large areas of land?**

Ask several groups of students to share their findings with the class.

Now ask students to use their (blue) Post-It Flags to mark large and smaller bodies of water. As students locate oceans, seas, lakes, and rivers, ask each group questions, such as:

- **Where can we find water on the Earth's surface?**
- **What do you notice about the size of an ocean compared to a lake or river?**
- **Can water ever be found in the form of a solid? What is the weather like when water is frozen?**
- **What do you notice about the water on the Earth's surface compared to the land?**

After you have met with each group, call on several groups to describe water on the Earth's surface.

Ask students to move to a central location in the classroom (e.g., on the carpet).

**T - We learned a lot about the Earth's surface by taking a close look at the land and bodies of water found there. Think about how you would describe the Earth's surface. Let's try to come up with 3–4 sentences that describe the water and land found on the Earth.** As students share thoughts, record ideas on chart paper.

**Example #2: (End of Unit 3)**

{Evaluates Student Mastery of Objective: Classify rocks as metamorphic, igneous, and sedimentary}

**Advance Preparation:**

You will need a metamorphic (e.g., soapstone), igneous (e.g., obsidian), and sedimentary rock (e.g., limestone).

**Task Assessment:** Present students with three rocks (e.g., obsidian, sandstone, and soapstone) and ask them to determine which is an example of igneous rock, sedimentary rock, and which is metamorphic. Have students select one rock at a time and take a few moments to examine its features. Ask students to

share which type of rock they believe it is and why. If students need prompting, ask them to tell you what they know about igneous/sedimentary/metamorphic rocks and guide them in identifying which of the rocks in front of them falls in line with those characteristics.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction it would be delivered. Aligned NGSS are noted in parentheses.*

#### Example #1: (End of Unit 3)

{Contributes to the Objective: “Sort rocks based on similar features”}

##### Advance Preparation:

- Assortment of **metamorphic rocks** (e.g., gneiss, phyllite, quartzite, schist, soapstone)
- Assortment of **igneous rocks** (e.g., scoria, pumice, peridotite, basalt, obsidian)
- Assortment of **sedimentary rocks** (e.g., breccia, conglomerate, limestone, rock salt, sandstone)
- Paper for each small group of students

**Activity:** Provide each small group of students with one rock.

**T - As a group, you will closely observe your rock. What are some characteristics that we should look for?** Guide students through a discussion that highlights the types of descriptive features they should examine and note about their rocks (e.g., the feel of the surface, the color(s), observable patterns, the shape, etc.). You may also include sentence starters (e.g., “It feels..., the shape is..., the colors are..., etc.) and/or the option of including illustrations as a means of supporting students with recording these observations.

After students have finished capturing their ideas on paper, call on a group to present the unique features of their rock. Ask the remaining students to look at their rocks and descriptions to see if they notice similarities.

##### **T - Which of you believe that your rock shares similar features?**

After these groups share their descriptions, guide the class with identifying what is similar and different about these rocks compared to the one shared by the first group. Ask the class if they think these may be the same type of rock. If they agree, place the rock in the same group as the first. If they believe it holds more differences, place the rock in a ‘new’ group (e.g., group 2). Explain that students can change their minds about what rocks belong in specific groups as more are reviewed. Continue this process with the groups that believe their rocks have similar features to the one presented first.

Call on one of the remaining groups to present what they observed about their rock. After students have shared their description, place that rock in a new group. Ask a remaining group if they believe their rock belongs in this group. Repeat this process until all of the rocks have been presented and added to a group.

Return to the groups of rocks. Guide students with pointing out similar features of each group. If you have 5 or more groups, support students with observing the rocks through a broader lens in order to reorganize



them into 3 or 4 groups. As students suggest specific rocks should be regrouped, ask them to explain their thinking.

**T - Today you will be learning about three different types of rocks: igneous, sedimentary, and metamorphic. Each rock we looked at today is either an igneous, sedimentary, or metamorphic rock. Let's examine each of type of rock and then decide which of our rocks fall into that category...**

### Example #2: (End of Unit 3)

{Contributes to the Objective: "Describe how fossils tell us about the past"}

#### Advance Preparation

- In this activity, you will create casts of students' hands or feet in order to replicate the process of fossilization as well as concretely illustrate how closely a "fossil" resembles the structure of the original. Decide how many casts you will create (e.g., several volunteers or entire class). This will determine how much of the following you will need:
  - Homemade plaster
  - Sand
  - Cardboard boxes
- Images of fossils (e.g., dinosaurs, fish, ammonite, trilobites, etc.,)

**Activity:** Engage students in an activity that replicates the formation of fossils. Partially fill a shallow cardboard box with sand, and have several volunteers put a handprint or footprint in the sand. Pour plaster over the sand and explain that the plaster acts in the same way as sediment does to cover and preserve the prints. Let the plaster solidify and harden and then remove it from the box. Children should see an exact replica of their hand/foot print in the plaster.

Ask the students what the "fossil" of their hand or footprint would tell someone about them (e.g., they have five fingers/toes, their shoe size, that they are most likely to be a child compared to an adult., etc.). Show images of a variety of fossils.

**T - These are images of fossils of living things from long ago. How do you think paleontologists use fossils to learn about the past?**

### Websites & Media

**NASA's Space Place:** <http://spaceplace.nasa.gov/>

During this unit, consider reviewing NASA's Space Place section on our planet [Earth](#). Information and media linked to this page can help you to connect this unit to previous learning with questions such as, "Are there volcanoes on other planets?"

**National Geographic Society—Magma and How It Forms:**

<http://nationalgeographic.org/encyclopedia/magma/>

Consider reviewing this webpage to learn about the formation of magma between Earth's crust and the mantle. Read about the ways magma can escape these boundaries and reach Earth's surface with tremendous and treacherous effects.

**Supplemental Trade Books**

- Digging Up Dinosaurs (Let's-Read-and-Find-Out Science 2), by Aliki (HarperCollins, 1988) ISBN 0064450783
- Dinosaurs (Magic Tree House Guide), by Will Osborne, Mary Pope Osborne, and Sal Murdocca (Random House Books for Young Readers, 2000) ISBN 0375802967
- Dinosaurs Before Dark (Magic Tree House, No. 1), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1992) ISBN 0679824111
- Earthquake in the Early Morning (Magic Tree House, No. 24), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 2001) ISBN 067989070X
- Earthquakes (Let's-Read-and-Find-Out Science 2), by Franklyn M. Branley and Megan Lloyd (HarperCollins, 2005) ISBN 0064451887
- Fossils Tell of Long Ago (Let's-Read-and-Find-Out Science 2), by Aliki (HarperCollins, 1990) ISBN 0064450937
- Hill of Fire, by Thomas P. Lewis (HarperCollins, 1983) ISBN 0064440400
- How to Dig a Hole to the Other Side of the Earth, by Faith McNulty (HarperCollins, 1992) ISBN 0874992338
- If You Find a Rock, by Peggy Christian (Sandpiper, 2008) ISBN 0152063544
- Let's Go Rock Collecting (Let's-Read-and-Find-Out Science 2), by Roma Gans and Holly Keller (HarperCollins, 1997) ISBN 0064451704
- Mountains of Fire, by Lily Richardson (National Geographic Society, 2003) ISBN 0792242831
- Planet Earth/Inside Out, by Gail Gibbons (Morrow Junior Books, 1995) ISBN 0688096808
- Rocks in His Head, by Carol Otis Hurst and James Stevenson (HarperCollins, 2001) ISBN 0060294035
- Sabertooths and the Ice Age: A Nonfiction Companion to Sunset of the Sabertooth, by Mary Pope Osborne, Natalie Pope Boyce, and Sal Murdocca (Random House Books for Young Readers, 2005) ISBN 0375823808
- Sunset of the Sabertooth (Magic Tree House, No. 7), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1996) ISBN 0679863737
- Soil, by George Wong (National Geographic Society, 2001) ASIN B0006S4Y26
- The Magic School Bus in the Time of the Dinosaurs, by Joanna Cole (Scholastic, 1995) ISBN 0590446894
- The Pebble in My Pocket: A History of Our Earth, by Meredith Hooper (Viking Juvenile, 1996) ISBN 0670862592

- Vacation Under the Volcano (Magic Tree House, No. 13), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1998) ISBN 0679890505
- Volcanoes (Let's-Read-and-Find-Out Science 2), by Franklyn M. Branley and Megan Lloyd (Collins, 2008) ISBN 0064451895
- Volcanoes: Mountains That Blow Their Tops, by Nicholas Nirgiotis (Grosset and Dunlap, 1996) ISBN 0448411431

Draft

**Core Knowledge Science Program—Domain Map****Science Content****Habitats**

- Living things live in environments to which they are particularly suited
- Specific habitats and what lives there, for example:
  - Forest [oak trees, squirrels, raccoons, snails, mice]
  - Meadow and prairie [wildflowers, grasses, prairie dogs]
  - Underground [fungi, moles, worms]
  - Desert [cacti, lizards, scorpions]
  - Water [fish, oysters, starfish]
- The food chain and food webs—a way of picturing the relationships between living things:
  - Animals: big animals eat little ones, big animals die and are eaten by little ones
  - Plants: nutrients, water, soil, air, sunlight

**Oceans & Undersea Life**

- Most of the earth is covered with water
- Locate oceans: Pacific, Atlantic, Indian, Arctic, Southern
- Oceans are salt water (unlike freshwater rivers and lakes)
- Coast, shore, waves, tides (high and low)
- Currents, the Gulf Stream
- Landscape of the ocean floor: mountain peaks and deep valleys (trenches)
- Diversity of ocean life: from organisms too small for the eye to see (plankton), to giant whales
- Dangers to ocean life (for example, overfishing, pollution, oil spills)

**Environmental Change & Habitat Destruction**

- Environments are constantly changing, and this can sometimes pose dangers to specific habitats, for example:
  - Effects of population and development
  - Rainforest clearing, pollution, litter
- A biography of Rachel Carson

**Specific Classifications of Animals**

- Herbivores: plant-eaters (e.g., elephants, cows, deer)
- Carnivores: flesh-eaters (e.g., lions, tigers, canines)
- Omnivores: plant and animal-eaters (e.g., bears, humans)
- Extinct animals (e.g., dinosaurs)

***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

***1-LS3-1.*** Make observations to construct an evidence-based account that **young plants and animals are like, but not exactly like, their parents.**

***Rationale:***

This unit will extend previous learning from Kindergarten (Unit 2 *Animals & Their Needs* and Unit 3 *Plants & Farms*) as well as the Grade 1 Unit 1 *Human Body Systems*. Specifically, this unit will provide students the opportunity to deepen their learning about early progressions of [LS3.A](#) and [LS3.B](#). As students build knowledge of special classifications of animals (e.g., carnivores) they will be asked to connect their understanding to early ideas of inheritance and variation in animals. For example, canines have a characteristic pattern of teeth, owing to their shared inheritance, but not all canines look exactly alike. When discussing habitats, students will be asked to describe that a habitat is made up of many different plants, including groups in which individuals look very similar, but not exactly alike.

***1-LS1-2.*** Read texts and use media to **determine patterns in behavior of parents and offspring that help offspring survive.**

This unit will build from the foundations laid in earlier units to prepare students for **1-LS1-2**. The core idea central to this standard, [LS1.B](#), will be explored in this unit with examples and patterns of how animal parents care for their offspring as students explore different habitats and what lives there.

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

Grade 2 Topic: [Interdependent Relationships in Ecosystems](#)

***Rationale:***

More so than any Grade 1 standard in the NGSS, this unit most directly serves this Grade 2 topic. It introduces examples, models, and concepts central to the core ideas of [LS2.A](#) (Interdependent Relationships) and [LS4.D](#) (Biodiversity) as students explore each of the subtopics within this domain-based unit (e.g., developing and using models in the form of food chains/webs in order to discuss cause and effect relationships within an ecosystem). This topic will be addressed and extended again in Grade 2 Unit 6 *Ecosystems*.

|   |   |
|---|---|
| <p>Grade 3 Topic: <a href="#">Interdependent Relationships in Ecosystems: Environmental Impacts on Organisms</a></p>  | <p><b>Rationale:</b></p> <p>Similar to this Grade 3 topic, this unit “bundles” the core ideas of <a href="#">LS2.C</a>, <a href="#">LS4.A</a>, <a href="#">LS4.C</a>, <a href="#">LS4.D</a> to provide a rich learning experience that will be extended across Grades 1–3 and beyond. These core ideas will be coherently addressed in this unit, as well as within Grade 2 Units 1 and 2—<i>Cycles in Nature</i> and <i>Insects</i>—and within Grade 3 Units 1 and 6—<i>Introduction to Classification</i> and <i>Ecology</i>.</p> <p>For example, the study of DCIs LS2.C and LS4.D in this early grade will help prepare students to meet or exceed <b>3-LS4-4</b> as students compare and discuss possible solutions to problems when a habitat changes.</p>  |
| <p>Grade 5 Topic, <a href="#">Matter and Energy in Ecosystems</a></p> <p><b>5-ESS2-1.</b> <i>Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</i></p> | <p>This unit offers the opportunity to foreshadow the NGSS Grade 5 topic, Matter and Energy in Ecosystems. This topic coherently progresses the core ideas already listed above by connecting these to other, related DCIs, including <a href="#">LS1.C</a> (Energy Flow in Organisms), <a href="#">LS2.B</a> (Cycles of Matter &amp; Energy Flow in Ecosystems), and the early progression of <a href="#">PS3.D</a> (Energy in Everyday Life). The early introduction of food chains and food webs within the context of deep study about habitats/ecosystems offers an excellent opportunity to introduce key vocabulary. This early introduction will ensure that students are adequately prepared with the language tools necessary to deeply study these ideas in later grades.</p> <p>This unit provides an opportunity to extend knowledge of <a href="#">ESS2.A</a> (Earth’s Materials &amp; Systems), which is central to <b>5-ESS2-1</b> and first introduced during Grade 1 Unit 3 <i>Introduction to Geology</i>. The Grade 5 endpoint for this core idea states that students should understand, “The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate.” (Framework, page 181) This core idea will be further extended in Grade 4 Unit 4 <i>Geology</i>, Unit 5 <i>Meteorology</i>, and Grade 5 Unit 7 <i>Matter &amp; Change</i>.</p> |

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen the understanding of this domain.*

#### POTENTIAL CCSS Math Connections

MP.2 Reason abstractly and quantitatively. (1-LS3-1)

MP.5 Use appropriate tools strategically. (1-LS3-1)

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)

#### POTENTIAL CCSS ELA Connections

RI.1.1 Ask and answer questions about key details in a text. (1-LS3-1 & 1-LS1-2)

RI.1.2 Identify the main topic and retell key details of a text. (1-LS1-2)

RI.1.10 With prompting and support, read informational texts appropriately complex for grade. (1-LS1-2)

W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS3-1)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)

#### POTENTIAL Cross-Curricular Connections

##### Potential Links:

**ELA:** Poetry—“I Know All the Sounds That the Animals Make” by Jack Prelutski

Fiction—“Why the Owl Has Big Eyes” (An Iroquois legend)

Sayings and Phrases—“Fish out of water,” “There’s no place like home”

**Geography:** Spatial Sense—Working with maps, globes, and other geographic tools (*with regards to locating oceans, describing the landscape of the ocean floor, etc.*)

## Prior Knowledge

### ***Core Knowledge Kindergarten Sequence***

- What plants need to grow: sufficient warmth, light, and water
- Basic parts of plants: seed, root, stem, branch, leaf
- Flowers and seeds: seeds as food for plants and animals (for example, rice, nuts, wheat, corn)
- Two kinds of plants: deciduous and evergreen
- Animals, like plants, need food, water, and space to live and grow
- Plants make their own food, but animals get food from eating plants or other living things
- Offspring are very much (but not exactly) like their parents
- Most animal babies need to be fed and cared for by their parents; human babies are especially in need of care when young
- Conservation: Some natural resources are limited, so people must be careful not to use too much of them (example: logging and reforestation)
- Pollution (for example, littering, smog, water pollution) can be harmful, but if people are careful they can help reduce pollution

### ***CKLA Kindergarten***

#### **Domain Anthology, *Farms***

- Identify needs of farm animals: food, water, and space to live and grow
- Describe how farm animal babies need to be fed and cared for by their parents or by people
- Identify foods that come from animals
- Explain why farmers grow crops
- Identify crops as plants grown on farms for use as food
- Describe how some food comes from farms as crops
- Sequence the seasonal rhythm of planting, growing, and harvesting
- Describe how farmers protect their crops from drought and pests

#### **Domain Anthology, *Plants***

- Explain that different kinds of plants grow in different environments
- Explain that plants are living things
- Describe what plants need to live and grow: food, water, air, and light
- Explain that the plant makes its food in its leaves
- Explain the basic life cycle of plants
- Explain that some plants produce fruit to hold seeds
- Compare and contrast the fruits and seeds of different plants
- Identify the parts of specific plants that are eaten by people
- Describe how bees collect nectar and pollen
- Describe how bees make and use honey
- Describe the important role bees play in plant pollination
- Compare and contrast deciduous and evergreen trees



**Domain Anthology, *Plants (continued)***

- Explain that deciduous trees belong to types of plants that lose their leaves in the fall and become dormant in the winter
- Explain that evergreen trees belong to types of plants that stay green all year and do not become dormant in the winter
- Identify how deciduous trees are important to people and nature
- Identify things that plants provide to people: oxygen, food, and important products
- Describe the life and scientific achievements of George Washington Carver

**Domain Anthology, *Taking Care of the Earth***

- Explain why people have a special responsibility to take care of the earth
- Explain that Earth is composed of natural resources (land, water, and air) and that humans, plants, and animals depend on Earth's natural resources to live
- Explain different types of pollution, including litter, air pollution, and water pollution, and how most types of pollution are caused by people
- Explain what happens to garbage from its creation to being dumped in the landfill; to recyclable materials from home to a recycling factory; to discarded food from the table to the compost pile to the garden; and the water cycle
- Identify possible solutions for the problems of garbage, litter, pollution, and the conservation of natural resources

**Core Knowledge Science** (Previously taught units in the CK Science program)**Kindergarten Unit 2 *Animals & Their Needs***

- Classify living things and nonliving things
- Compare and contrast humans and other animals
- Identify at least three basic needs of animals
- Describe how animals use specific body parts to meet their needs
- Describe at least two ways that animals protect themselves from other animals
- Describe how animals care for their young offspring
- Describe similar (and different) ways animals and humans take care of their young offspring
- Identify how scientists can learn about animal characteristics and behaviors
- State two defining characteristics of mammals
- Describe at least one difference between fish and mammals
- State two defining characteristics of birds
- Describe at least one difference between birds and insects
- Categorize pictures of birds, fish, insects, and mammals
- Describe animals' characteristics or behaviors that allow them to survive in the wild
- Describe the meaning of the term "habitat"
- Identify animals that can live in ocean, woodland, desert, and savanna habitats
- Describe how animals can change their habitats in order to meet their needs
- Categorize pictures of animals into groups (herbivores, carnivores, or omnivores) based on examples of food that they eat

### Kindergarten Unit 3 *Plants & Farms*

- Describe how plants get and store energy
- Describe how plants grow
- Sequence the life cycle of a plant
- Identify characteristics of deciduous and evergreen plants
- Classify plants as deciduous or evergreen
- Identify what plants need in order to live and grow
- Compare and contrast plants' basic needs to the needs of animals and human beings
- Infer how plants may change their habitat in order to meet their needs
- Describe how George Washington Carver used plants to meet people's needs
- Identify the needs of crops on a farm
- Describe how farmers use natural resources to take care of their crops
- Identify common livestock that can live on a farm
- Describe how plants help livestock meet their needs
- Describe the process harvesting crops to people purchasing produce to consume
- Identify ways in which we can keep food fresh

### Kindergarten Unit 5 *Taking Care of the Earth*

- Explain what a "natural resource" is and give at least three examples
- Identify everyday objects that are made from natural resources
- Describe how humans use the earth's natural resources
- Identify common resources that are limited and nonrenewable
- Classify resources as renewable or nonrenewable
- Describe how humans have changed the environment around them in order to meet their needs
- Identify examples of garbage produced by humans
- Describe why landfills pose a problem for humans, animals, and plants
- Identify different forms of pollution
- Describe why pollution poses a problem for humans, animals, and plants
- Describe why humans have a special responsibility to take care of the earth
- Describe how humans can reduce the pollution in their environment
- Identify items that can be used over and over again
- Identify materials that can be recycled
- Classify objects as recyclable or as garbage
- Compare and contrast the process of composting with the process of recycling
- Identify how we can conserve energy and resources
- Describe the significance of Earth Day
- Develop solutions that can protect Earth's natural resources

### CKLA Grade 1 Objectives

The following objectives are addressed through the Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain domains of literature, science, and history. To learn more about how and why the Listening & Learning Strand of CKLA approaches science content through read-alouds and ELA instruction, [read more about the CKLA program](#).

#### Domain Anthology, *Animals & Habitats*

- Explain what a habitat is
- Explain why living things live in habitats to which they are particularly suited
- Identify the characteristics of the Arctic tundra habitat
- Identify the characteristics of the Arctic Ocean habitat
- Explain how Arctic animals have adapted to the Arctic tundra and Arctic Ocean habitats
- Identify the characteristics of the desert habitat
- Explain how desert animals have adapted to the desert habitat
- Classify animals on the basis of the types of food that they eat (herbivore, carnivore, omnivore)
- Identify the characteristics of the grassland habitat
- Explain how grassland animals have adapted to the grassland habitat
- Match specific plants and animals to their habitats
- Identify the characteristics of the temperate deciduous forest habitat
- Explain how temperate deciduous forest animals have adapted to the temperate deciduous forest habitat
- Identify the characteristics of the tropical rainforest habitat
- Explain how tropical rainforest animals have adapted to the tropical rainforest habitat
- Classify water habitats as either freshwater or saltwater habitats
- Identify the characteristics of the freshwater habitat
- Explain that salt water covers most of Earth and is found in oceans
- Identify and locate the oceans of the world on a globe: Arctic, Pacific, Atlantic, Indian, Southern
- Describe the landscape of the ocean floor
- Describe ocean life as very diverse
- Match saltwater plants and animals to the saltwater habitat
- Identify the characteristics of the bald eagles' habitat
- Explain why and how habitat destruction can cause extinction

### What Students Will Learn in Future Grades

#### Core Knowledge Sequence

##### Grade 2 Cycles in Nature

- Seasonal Cycles
- Life Cycles of Plants and Animals
- The Water Cycle

**Grade 3**

**Introduction to the Classification of Animals**

- Scientists classify animals according to the characteristics they share, for example:  
 Cold-blooded or warm-blooded  
 Vertebrates (have backbones and internal skeletons) or invertebrates (do not have backbones or internal skeletons; for example, insects)
- Different classes of vertebrates, including fish, amphibians, reptiles, birds, and mammals

**Ecology**

- Habitats, interdependence of organisms and their environment
- The concept of a “balance of nature” (constantly changing, not a static condition)
- The food chain or food web: producers, consumers, decomposers
- Ecosystems: how they can be affected by changes in environment (for example, rainfall, food supply, etc.), and by human use of resources
- Human impact on the environment
- Air pollution: emissions, smog
- Water pollution: industrial waste, runoff from farming
- Measures we can take to protect the environment (for example, conservation, recycling)

**Core Vocabulary**

*The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced to and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.*

**Habitats**

*environment, **habitat**, ecosystem, region, territory, zone, **climate**, tropical, temperate, arctic, living, survive, needs, adapted, characteristic, pattern, **trait**, parent, child(ren), offspring, species, organism, population, community, flora, fauna, (bio)diversity, coexist, protect, **camouflage**, shelter, hunt, feed, **predator**, prey, producer, decomposer, food chain/web, forest, oak, squirrel, raccoon, snail, mice, rainforest, canopy, grassland, meadow, prairie, wildflowers, grass, prairie dogs, underground, fungus, mole, worm, desert, cactus, lizard, scorpion, water, underwater, fish, oysters, starfish, [other things that live in the various habitats studied]*

**Oceans and Undersea Life**

*ocean, **aquatic**, sea, water, **saltwater**, **freshwater**, Pacific, Atlantic, Indian, Arctic, Southern Oceans, river, lake, pond, **coast**, **shore**, wave, tide, **current**, Gulf Stream, **landscape**, mountain, peak, valley, trench, diversity, danger, fishing, pollution, oil spills, creature, animal, life, fish, whale, shark, squid, octopus, coral, reef, plankton, [other names of ocean life], life zone*

**Special classifications of animals**

***herbivore**, **carnivore**, **omnivore**, teeth, feed, food, eat, chew, consume, extinct(ion), **fossil**, dinosaur, [other examples of extinct species], remains, preserve, impression, rock, stone, mineral, **paleontologist**, excavate, fossil record*

**Environmental Change**

**resource**, (non-)renewable, change, **impact**, consequence, global, world, **cause**, **effect**, long-term, short-term, **system**, cycle, interact, conserve, sustain, reduce, lessen, save, help, clean, preserve, protect, aware(ness), careful, practical, **effective**, responsible, reminder, positive, negative, pollution, waste, garbage

**Potential Misconceptions**

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

**Misconception: “Different kinds of organisms (species) do not compete for the same natural resources.”**

Students may conclude that *different species* use different resource “stores” to meet their needs of food, water, space, and/or light. This may be reinforced by oversimplified representations of food chains/webs without special instruction to uncover and address this misconception.

**Misconception: “Organisms of the same species do not compete with each other for natural resources.”**

Similar to above, students may conclude that organisms of the *same species (or in similar groups or classes)* use different resource “stores” to meet their needs. For example, some students describe that plants do not compete with other plants for light, water, and space. This may be reinforced by simplified representations of food chains/webs without special instruction to uncover and address this misconception.

**Misconception: “Organisms at the ‘top of the food chain’ are better, or ‘better adapted’ to their environment.”**

Common phrases in everyday language, such as “bottom of the food chain,” may influence student descriptions of the interactions between organisms. Teachers should be mindful of their descriptions of how each organism in an environment (small or large, predator or prey) plays a critical role in maintaining the health and balance within an ecosystem.

**Misconception: “The food chain has a beginning and an end.”**

Food chain diagrams are useful to illustrate how energy and matter flow between organisms, however the linear representation can also lead to this misconception. Teachers should probe for students’ thinking and understanding about the limitations of food chains as a model.

**Key points for instruction:**

“Students of all ages... may have the tendency to imagine that all environmentally friendly actions help to solve all environmental problems (for example, the use of unleaded petrol reduces the risk of global warming)” (*Atlas of Science Literacy*, Vol. 2 pg. 20, AAAS Project 2061). As instruction progresses within and across the grades, teachers should attempt to clearly and accurately foster descriptions of cause and effect relationships.

**Potential Objectives for this Grade 1 Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Explain why different living things are found in different environments
- Identify oak trees, squirrels, and deer and describe their habitats\*
- Identify toucans, jaguars, anacondas and describe their habitats\*
- Compare and contrast the habitats of jaguars and deer
- Identify lions, antelopes, and zebra and describe their habitats\*
- Identify armadillos, cacti, and lizards and describe their habitats\*
- Compare and contrast the habitats of lizards and zebra
- Identify worms, moles, and fungi and describe their habitats\*
- Identify dolphins, octopi, and starfish and describe their habitats\*
- Identify freshwater fish (e.g., bass) and describe their habitats\*
- Compare and contrast the habitats of starfish and freshwater fish
- Match plants and animals to their habitats
- Explain how various animals are adapted to their habitats
- Compare and contrast herbivores, carnivores, and omnivores
- Create food chains and food webs for specific habitats

**Middle**

- Describe the surface of the earth
- Describe the diversity of ocean life
- Explain how ocean water is different from fresh water
- Identify and locate the Pacific, Atlantic, Indian, Arctic, and Southern Oceans on a map
- Identify the coast, shore, waves, and tides (high and low) of an ocean
- Define the term current and provide an example
- Describe the landscape of the ocean floor

**End**

- Describe how the environment can change
- Explain how changing environments can sometimes pose dangers to specific habitats
- Describe what it means for an animal species to become extinct
- Identify Rachel Carson and describe her efforts to protect the environment

\*The intent with these objectives is to choose 1–3 animals in each habitat so students will be able to explore their habitats, recognize the patterns of similarities between these few, and over time, to recognize the patterns of differences across different habitats.

**Potential Big Guiding Questions****Essential Questions:**

- **Why are plants and animals in different habitats so different?**
- **How do animals impact their habitats?**
- **How have humans impacted the environment?**
- **What types of natural resources are consumed by wild animals? What patterns do you notice?**

## RE: Animals and Habitats

- What does a habitat provide for an animal?
- How do special characteristics of animals help them survive in their given habitats?
- How do characteristics of their habitats help animals survive?
- How are animals in a given habitat alike?

## RE: Animal Classifications

- How can animals be grouped together based on how they meet their needs?
- In what ways are the things that animals eat alike and different?

## RE: Oceans

- What makes up earth's surface?
- Why are there so many kinds of life under the sea?
- How does the landscape of the ocean compare to the landscape of the earth?
- What causes waves?

## RE: Environmental Changes

- Is nature static or dynamic?
- What are some ways in which humans affect the environment?
- What can we do to limit the damage we cause to the environment?
- Why do some animals become extinct?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.*

#### **Example: (Beginning of Unit 4)**

**{Evaluates Student Mastery of Objectives:** Match plants and animals to their habitats; explain how various animals are adapted to their habitats}

**Note:** This assessment can be used after Potential Activity Example #1, described below.

#### **Advance Preparation:**

Image cards for 5–7 different animals (at least one for each habitat and one challenge: an animal they have not discussed before, optional)

In designated areas around your classroom, post student drawings/representations of each habitat that they created earlier in this unit.

**Note:** You may wish to use the Animals & Habitats chart (see Sample Activity # 1 below) as a reference for students during this assessment task. For a challenge, you may wish to cover up the Animals row/column of that chart.

As a culminating assessment activity for the Animals and Habitats section of this unit, have students identify the environments to which particular animals are well suited, and describe how the animals are well-adapted to each environment. For this activity, you can utilize designated areas around your classroom by arranging the student drawings/representations of each habitat from previous lessons.

**T - For this activity, please stand. You may put on your safari hats (optional). Today, we’ll be doing more than just exploring. You have created habitats in different areas of the room through your drawings/art. Can you tell me the name of each habitat you’ve explored so far, and where it’s represented in the classroom?** After students have identified each habitat, show the first animal image card.

**T - What is the name of this animal? What are some key characteristics of this animal? How does it look, get food, and where does it seek shelter?** Give students time to answer these questions.

**T - Using what you know now about this animal, move to the place in the room that represents the habitat where that animal makes its home.** Allow students to arrange themselves in the area of the room representing the animal.

**T - Why did you choose this habitat?** Guide students to base their answers on the characteristics of the animal and habitat, and how they match. If any students have different answers than their peers, allow



them to voice their reasonings. Give students a chance to rearrange themselves once everyone has explained why they chose their respective habitats.

**T - Describe the characteristics of this animal, its traits, that make it particularly suited to this habitat.**

Repeat this process and line of questions for each of the image cards. If you have additional time, encourage each student (one at a time) to name an additional animal not represented by the image cards, and repeat the activity for those animals.

Remind students that living things have made their homes in many different environments. A habitat matches the animal, and the animal matches the habitat.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction where it would be delivered. Aligned NGSS are noted in parentheses.*

#### **Example #1: (Beginning of Unit 4)**

**{Contributes to the Objective: Explain how various animals are adapted to their habitats}**

#### **Advance Preparation:**

Safari hats (paper or plastic, optional)

Animals & Habitats chart (depicting each animal studied and the characteristics such as food and shelter that make up its habitat)

Image Cards for Habitats chart (optional)

Art supplies (paper, markers, etc.)

During early lessons of this unit, students will discuss particular animals and identify their habitats and their characteristics. Encourage students to explore and make connections about the habitats while providing structure to the conversation, using the following general steps.

Read a short story or share a description of the habitat with students.

**T - You will be explorers today, so put on your safari hats and prepare for an adventure to meet a new animal and its habitat.** Remind students of the things they have learned about several animals and the habitats already, using the Animals & Habitats chart as a guide.

**T - Today, we are going to learn about an animal called the armadillo.** Show image of armadillo.

**T - What do you notice about this creature just by looking at it?** Encourage students to describe its physical characteristics, such as tough shell, pointy nose/face, long tail. Then, show an image, a video,

and/or read a description of the armadillo in its environment. Ask students to describe the armadillo's habitat by leading them through questions of where it gets food, where it sleeps or has shelter, etc.

**T - What can you tell me about where this animal lives?** Ask students to describe the characteristics of its habitat, including food, shelter, and living and nonliving things.

**T - What do you notice about this animal that might help it in its environment?** (e.g., shell can help protect it from predators) Then help lead students to identify others that do not arise from discussion (e.g., **T - Why would a long snout be helpful to this animal? How does the armadillo deal with the temperature in the desert?**).

Have students answer questions to fill out the next line of the Animals & Habitats chart, and record their responses using decodable words and/or images.

Have students draw or otherwise construct a representation of the animal and its habitat. As students draw, check in with students around the room, asking about the characteristics they are including and not including, and why. When students are done, you may wish to gather these representations as a check for understanding. Arrange habitat drawings so each habitat is given a different location in the room.

#### **Example #2: (Middle of Unit 4)**

**{Contributes to the Objective: Describe the diversity of ocean life (*specifically the diversity of size*)}**

#### **Advance Preparation:**

Computer with internet access to visit a virtual tour of the ocean (whether an aquarium or video of the ocean)

Counting cubes or other items sized to represent the size of different animals as accurately as possible  
Images and/or video depicting several different ocean animals (e.g., whale, shrimp, dolphin) and a child

For five minutes, allow students to walk through a virtual tour of the ocean. Ask students to describe their favorite creatures or plants, the most interesting things they saw, the most dangerous, the biggest, the smallest, etc.

**T - The ocean is full of many, many interesting plants and animals. As we learned earlier, this is probably related to how much of Earth is covered by water. So since there is so much space, it makes sense there is a lot of ocean life. Today we are going to compare, or find differences between, different animals that live in the ocean. What are some ways we can do that?** Guide students to decide on the particular characteristic at which they would like to look more closely (e.g., size of animals). Share with students images and/or videos of several different ocean animals.

**T - The ocean is the home of some of the largest animals, and some of the smallest. Today we will look at one way animals in the ocean are very different: by looking at their size. How can we compare the size of these aquatic animals?** Let students think of a few ideas for ways to do this. The ideal is for students to compare the animals using something with an easily identifiable size as a reference (e.g., the size of person or an everyday object). Alternatively, you could design an investigation for students to simply see the animals' sizes relative to one another.

**T - We have this stack of cubes that represents you and your size.** (It would help students if you paste a picture of a child on the cube stack to help them visualize this represents them.)

**T - We have this cube over here that represents the size of a [fish].** (Again, it would help students if you paste a picture of the [fish] on the stack.) **What do you notice about the sizes of these two things? Is the [fish] bigger than you? Is it taller or wider?** Then introduce new animals (e.g., shrimp, whale, octopus, dolphin), one after another, asking comparison questions between them. Encourage students to compare their own sizes to the size of each of the animals they have seen. You may ask the students to arrange the cube stacks in order, from largest to smallest, or in other patterns to help them see the differences between animals in the ocean.

**T - What does seeing all these different sizes of animals tell you about ocean life?** (There's a lot of different sizes of animals in the ocean. The ocean must be big to house so many different, large creatures, etc.)

### Websites & Media

**San Diego Zoo—Habitats & Animals:** <http://animals.sandiegozoo.org/habitats>

Select a habitat and scroll through images of animals that live there. This may help your students to begin learning about the diversity of life on earth. This webpage may have been previously shared with students during Kindergarten Unit 2 *Animals & Their Needs*.

**Ocean Matching Game:** [http://www.sheppardsoftware.com/world\\_G0\\_Click.html](http://www.sheppardsoftware.com/world_G0_Click.html)

This game can be used to assess students' knowledge of the locations of the world's oceans. Teachers can also select an option to review the location of the continents if desired, which is a review from Kindergarten science and geography.

**Endangered Animals:**

[http://www.sheppardsoftware.com/content/animals/kidscorner/endangered\\_animals/whats\\_the\\_problem.htm](http://www.sheppardsoftware.com/content/animals/kidscorner/endangered_animals/whats_the_problem.htm)

"By learning about the problems that face animals, we can figure out how to save them!" You may wish to use this website to explore and discuss different threats to animals, such as habitat loss, pollution, and poaching.

**American Museum of Natural History:** <http://www.amnh.org>

The AMNH website houses wonderful information and ideas for projects and investigations about our natural world. For example, the AMNH online exhibit regarding [Theodore Roosevelt](#) may help Grade 1 teachers to connect previous learning about our 26th president (review from Kindergarten) and expand students' understanding of conservation and protecting the environment.

**National Geographic Virtual Worlds—The Deep Sea:**

<http://animals.nationalgeographic.com/animals/crittercam-virtual-world-deep-sea/>

This interactive simulation can help students to explore regions of the earth that very few people ever have the chance to visit—the depths of our oceans. Students and teachers use the computer mouse to find specific creatures and learn more about their features and their lifestyles in the ocean habitat.

**National Geographic Interview with a Marine Scientist—Sylvia Earle:**

[http://kids.nationalgeographic.com/kids/photos/oceans/#/tierradelfuego-745734\\_15601\\_600x450.jpg](http://kids.nationalgeographic.com/kids/photos/oceans/#/tierradelfuego-745734_15601_600x450.jpg)

This brief interview can be read and discussed with students to learn more about scientists like Dr. Sylvia Earle who study marine life and our world's oceans.

**Supplemental Trade Books**

- About Birds: A Guide for Children, by Cathryn Sill and illustrated by John Sill (Peachtree Publishers, 1997) ISBN 1561451479
- Afternoon on the Amazon (Magic Tree House, No. 6), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1995) ISBN 0679863729
- Rain Forests (Magic Tree House Research Guide), by Will Osborne and Mary Pope Osborne (A Stepping Stone Book, 2001) ISBN 0375813551
- Animal Homes (Luxury Lift the Flap Learners), by Debbie Martin, Jane Rigby, and Alan Baker (Usborne Books, 2004) ISBN 0794507158
- Buffalo Before Breakfast (Magic Tree House, No. 18), by Mary Pope Osborne and Sal Murdocca (Random House, 1999) ISBN 0679890645
- Cactus Hotel (An Owlet Book), by Brenda Z. Guiberson and Megan Lloyd (Henry Holt and Company, 1993) ISBN 0805029605
- Dark Day in the Deep Sea (Magic Tree House, No. 40), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 2009) ISBN 0375837329
- Sea Monsters: A Nonfiction Companion to Dark Day in the Deep Sea, by Mary Pope Osborne, Natalie Pope Boyce, and Sal Murdocca (Random House Books for Young Readers, 2008) ISBN 0375846638
- Desert Giant: The World of the Saguaro Cactus (Tree Tales), by Barbara Bash (Sierra Club Books for Children, 2002) ISBN 1578050855
- Dingoes at Dinnertime (Magic Tree House, No. 20), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 2000) ISBN 0679890661
- Dolphins and Sharks: A Magic Tree House Research Guide, by Mary Pope Osborne, Natalie Pope Boyce, and Sal Murdocca (Random House Books for Young Readers, 2003) ISBN 0375823778
- Dolphins at Daybreak (Magic Tree House, No. 9), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1997) ISBN 067988338X

- Penguins and Antarctica (Magic Tree House Research Guides), by Mary Pope Osborne, Natalie Pope Boyce, and Sal Murdocca (Random House Books for Young Readers, 2008) ISBN 0375846646
- Eve of the Emperor Penguin (Magic Tree House, No. 40), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 2008) ISBN 0375837337
- Exploring Tide Pools, by Monica Halpern (National Geographic Society, 2002) ISBN 0792285131
- Good Morning, Gorillas (Magic Tree House, No. 26), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 2002) ISBN 0375806148
- Here Is the African Savanna (Web of Life), by Madeleine Dunphy (Web of Life Children’s Books, 2006) ISBN 0977379523
- Here Is the Arctic Winter (Web of Life), by Madeleine Dunphy (Web of Life Children’s Books, 2007) ISBN 0977753913
- Here Is the Coral Reef (Web of Life), by Madeleine Dunphy (Web of Life Children’s Book, 2006) ISBN 097737954X
- How to Hide an Octopus and Other Sea Creatures (All Aboard Book), by Ruth Heller (Grosset and Dunlap, 1992) ISBN 0448404788
- Life in a Pond (Pebble Plus: Living in a Biome), by Carol K. Lindeen (Capstone Press, 2003) ISBN 0736834028
- Life in a Wetland (Living in a Biome), by Carol K. Lindeen (Capstone Press, 2006) ISBN 0736834052
- Lions at Lunchtime (Magic Tree House, No. 11), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1998) ISBN 0679883401
- Oil Spill! (Soar to Success), by Melvin Berger (Houghton Mifflin Company, 2006) ISBN 0395779138
- Polar Bears and the Arctic (Magic Tree House Research Guide), by Mary Pope Osborne and Natalie Pope Boyce (A Stepping Stone Book, 2007) ISBN 037583222X
- Polar Bears Past Bedtime (Magic Tree House, No. 12), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1998) ISBN 067988341X
- Seven Continents, by Elaine Morris (National Geographic Society, 2003) ISBN 0792243684
- Snakes Are Hunters (Let’s-Read-and-Find-Out Science, Stage 2), by Patricia Lauber (HarperTrophy, 1989) ISBN 0064450910
- Starfish (Let’s-Read-and-Find-Out-Science), by Edith Thacher Hurd and illustrated by Robin Brickman (HarperTrophy, 2000) ISBN 0064451984
- The Arctic Habitat, by Mary Aloian and Bobbie Kalman (Crabtree Publishing Company, 2006) ISBN 0778729818
- The Great Kapok Tree: A Tale of the Amazon Rainforest, by Lynne Cherry (Voyager Books, 2000) ISBN 0152026142
- Tigers at Twilight (Magic Tree House, No. 19), by Mary Pope Osborne and Sal Murdocca (Random House Books for Young Readers, 1999) ISBN 0679890653
- What is a Carnivore?, by Bobbie Kalman (Crabtree Publishing Company, 2010) ISBN 9780778732945

- What is Hibernation?, by John Crossingham and Bobbie Kalman (Crabtree Publishing Company, 2002) ISBN 0865059640
- What Lives in a Tide Pool?, by Lily Richardson (National Geographic Society, 2007) ISBN 0792243374
- Who Eats What? Food Chains and Food Webs (Let's-Read-and-Find-Out-Science, Stage 2), by Patricia Lauber and Holly Keller (HarperTrophy, 1994) ISBN 0064451305
- Why do Animals Migrate?, by Bobbie Kalman (Crabtree Publishing Company, 2009) ISBN 9780778733034

## Core Knowledge Science Program—Domain Map

## Science Content

- Everything is made of matter
- All matter is made up of parts too small to see
- Introduction to the basic concept of atoms
- Names and common examples of three states of matter:
  - solid (for example, wood, rocks)
  - liquid (for example, water)
  - gas (for example, air, steam)
- Water as an example of changing states of matter of a single substance: solid ice, liquid water, and gas (i.e., air and water vapor)
- Units of measurement:
  - Length: centimeter, inch, foot
  - Volume: gallon, quart
- Temperature: degrees Fahrenheit

***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

Grade 2 Topic [Structure & Properties of Matter](#), for example:

***2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.***

***2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.***

***Rationale:***

This unit lays a significant foundation for learning about [PS1.A](#) (Structure & Properties of Matter) which was first introduced in Kindergarten during Units 5 and 6 (e.g., sorting recyclable objects and classifying objects that are or are not attracted by a magnet). As students investigate water, they will also be preparing for the early progression of core idea [PS1.B](#) (Chemical Reactions) which sets an expectation that primary students understand, “Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible (e.g., melting and freezing)...” (*Framework*, page 110) This will be extended during Grade 2 Unit 1 *Cycles in Nature* using this Grade 1 learning as a base. The Grade 2 Topic [Structure & Properties of Matter](#) will also be explicitly addressed during Grade 2 Unit 5 *Simple Machines* during which students will engage in at least one design challenge to apply these core ideas and connect to engineering, design, and the concept of [Structure & Function](#).

**2-ESS2-3.** Obtain information to **identify where water is found on Earth and that it can be solid or liquid.**

**Rationale:**

This unit—coupled with the earlier Grade 1 units *Living Things & Their Environments* (Unit 4 re: water habitats) and *Introduction to Geology* (Unit 3 re: oceans)—will directly support the core idea [ESS2.C](#) (Roles of Water in Earth’s Surface Processes). Students also have the opportunity to learn about water’s importance and prevalence on Earth’s surface during Grade 2 Unit 1 *Cycles in Nature* when students will review where they can find water and explore the concept that most of Earth’s surface is covered in water.

**Potential Skills & Cross-Curricular Integrations**

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen the understanding of this domain.*

**POTENTIAL CCSS Math Connections**

[MP.2](#) Reason abstractly and quantitatively. (2-PS1-2)

[MP.4](#) Model with mathematics. (2-PS1-1) (2-PS1-2)

[MP.5](#) Use appropriate tools strategically. (2-PS1-2)

[1.MD.C.4](#) Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (2-PS1-1),(2-PS1-2)

**POTENTIAL CCSS ELA Connections**

[RI.1.1](#) Ask and answer questions about key details in a text. (2-PS1-4)

[RI.1.3](#) Describe the connection between two individuals, events, ideas, or pieces of information in a text. (2-PS1-4)

[RI.1.8](#) Identify the reasons an author gives to support points in a text. (2-PS1-2 and 2-PS1-4)

[W.1.1](#) Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure. (2-PS1-4)



W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions). (2-PS1-1, 2-PS1-2, and 2-PS1-3)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (2-PS1-1, 2-PS1-2, and 2-PS1-3)

#### POTENTIAL Cross-Curricular Connections

##### Potential Links:

**Mathematics:** Measurement—Identify familiar instruments of measurement, such as ruler, scale, thermometer. Compare objects according to: linear measure (e.g., using non-standard units as well as inches, feet, and centimeters), weight (e.g., using non-standard units and pounds, using a balance scale), and capacity (e.g., estimate and measure capacity [volume] in cups and identify a quart and gallon).

#### Prior Knowledge

##### **Core Knowledge Kindergarten Sequence**

##### **IV. Introduction to Magnetism**

- Magnetism is a property of matter
- Identify familiar everyday uses of magnets (for example, in toys, in cabinet locks, in “refrigerator magnets,” etc.)
- Classify materials according to whether they are or are not attracted by a magnet

##### **VI. Taking Care of the Earth**

- Some materials can be recycled (for example, aluminum, glass, paper)

##### **CKLA Kindergarten Listening & Learning**

##### **Domain Anthology, *Taking Care of the Earth***

- Identify common recyclable materials, including glass, plastic, aluminum, cardboard, and paper.

##### **Core Knowledge Science** (Previously taught units in the CK Science program)

##### **Kindergarten**

##### **Unit 5 *Taking Care of the Earth***

- Identify everyday objects that are made up of natural resources
- Identify common resources that are limited and nonrenewable
- Classify resources as renewable or nonrenewable
- Identify items that can be used over and over again
- Identify materials that can be recycle. (2-PS1-1)
- Classify objects as recyclable or as garbage

**Unit 6 Pushes, Pulls, and an Introduction to Magnets**

- Describe different ways magnets are used in everyday life
- Describe the term *attract*
- Classify materials according to whether they are or are not attracted by a magnet
- Describe the term *repel*
- Apply your knowledge of forces and magnets to solve a problem

**Grade 1****Unit 3 Introduction to Geology**

- Describe the weather and climate of different regions of Earth
- Identify and describe landforms and bodies of water in our local area
- Develop a model that represents the landforms and bodies of water in our local area (2-EE2-2)
- Compare and contrast volcanoes and geysers
- Sort rocks based on similar features
- Describe features of metamorphic, igneous, and sedimentary rocks
- Describe how metamorphic, igneous, and sedimentary rocks are formed
- Classify rocks as metamorphic, igneous, and sedimentary

**Unit 4 Living Things & Their Environments**

- Identify dolphins, octopi, and starfish and describe their habitats\*
- Identify freshwater fish (e.g., bass) and describe their habitats\*
- Compare and contrast the habitats of starfish and freshwater fish
- Describe the surface of Earth
- Explain how ocean water is different from fresh water
- Identify and locate the Pacific, Atlantic, Indian, Arctic, and Southern Oceans on a map
- Identify the coast, shore, waves, and tides (high and low) of an ocean
- Define the term *current* and provide an example

**CKLA Grade 1 Objectives—Not Applicable**

The Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain [domains of literature, science, and history](#), **does not include the study of matter and its properties**. In order to prepare students to meet or exceed the NGSS Grade 2 Topic [Structure & Properties of Matter](#), this unit (as well as Grade 2 Unit 5 Simple Machines) is critical to advance students' understanding of the physical sciences. To learn more about how and why the Listening & Learning Strand of CKLA approaches certain science content through read-alouds and ELA instruction, [read more about the CKLA program](#).

### What Students Will Learn in Future Grades

#### **Core Knowledge Sequence**

##### **Grades 2, 3, and 4 Measurement**

- linear measurement
- weight
- volume
- temperature

##### **Grade 2 Magnetism**

- Magnetism demonstrates that there are forces we cannot see that act upon objects
- Most magnets contain iron
- Lodestones: naturally occurring magnets
- Magnetic poles: north-seeking and south-seeking poles
- Magnetic field (strongest at the poles)
- Law of magnetic attraction: unlike poles attract, like poles repel
- The earth behaves as if it were a huge magnet: north and south magnetic poles (near, but not the same as, geographic North Pole and South Pole)
- Orienteering: use of a magnetized needle in a compass, which will always point to the north

##### **Grade 2 Simple Machines**

- Types of simple machines (e.g., wheel-and-axle, gears [wheels with teeth and notches], how gears work, and familiar uses such as bicycles)
- Friction, and ways to reduce friction (lubricants, rollers, etc.)

##### **Grade 3 Sound**

- Sound is caused by an object vibrating rapidly
- Sounds travel through solids, liquids, and gases
- Sound waves are much slower than light waves

##### **Grade 4 Electricity**

- Conductors versus insulators
- Electromagnets: how they work and their common uses

##### **Grade 4 Chemistry**

- atoms, molecules, and compounds
- properties of matter
- mass, volume, density, and vacuums
- elements
- solutions

##### **Grade 5 Chemistry**

- molecules and compounds
- chemical and physical changes

### Core Vocabulary

The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

#### Matter

**atom**, element, compound, molecule, electron, neutron, proton, nucleus, **particle**, unit, matter, **substance**, material, piece, part, component, solid, liquid, gas, **state**, example, water, ice, **vapor**, **(in)visible**, steam, **mixture**, combination, pure, (un)common, rare, subatomic, positive, negative, neutral, charge, electric, chemical, combine, **characteristic**, **property**, **melt**, **freeze**, solidify, **boil**, vaporize, evaporation, condense, condensation, **change**, **heat**, thermal, hydrogen, helium, oxygen, iron, gold, calcium, [names of other common elements and compounds]

#### Properties of matter

**property**, **characteristic**, unique, different, similar, alike, **tool**, instrument, unit, standard, **shape**, [names of geometric shapes], **size**, dimension, width, height, **inch**, **foot**, meter, centimeter, **ruler**, measuring stick, yardstick, [other words associated with length], **weight**, pounds, ounces, scale, balance, **volume**, space, **capacity**, gallon, quart, cup, pint, liter, color, [names of different colors], **texture**, feeling, sensation, rough, smooth, bumpy, slick, soft, fuzzy, [examples of materials with different textures], **temperature**, **thermometer**, **degree**, Fahrenheit, Celsius, **heat**, hot, warm, cold, cool, expand, contract, **pattern**, **observe**, measure, **record**, note, **classify**, communicate, present, **evidence**, argument, **explain**, **describe**

### Potential Misconceptions

Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.

**Misconception: “Clouds and fog are gases.”  
or “Visible steam/mist is an example of gas.”**

When in its gaseous state, water is invisible to the naked eye. Visible steam, clouds, and fog are examples of *mixtures* of invisible water vapor and small liquid water droplets that are suspended in air. Teachers and textbooks often overgeneralize the concept of “mixing clouds,” formally referred to as colloids and aerosols, and inaccurately classify a steam cloud rising from a tea kettle or even fog as just a gas. The existence of water vapor in the atmosphere can be difficult for students to understand even into the middle school grades (Lee. et. al, 1993; Johnson, 1998). The focus of this Grade 1 unit should be on an introduction to water vapor as an example of the gaseous state of water. Grades 2 and 4 will provide specialized instruction to address potential misconceptions such as, “When water evaporates it ceases to exist” and “Evaporated water is still liquid, but it has changed locations.” Using examples of steam and clouds can provide concrete examples of phenomena that often occur when water transitions between one state of matter and another.

**Misconception: “Ice cubes give off cold.”**

Students often think of 'cold' as being it's own force or phenomena, rather than as the absence of heat.

**Misconception: “Air and oxygen are the same thing.”**

Air is a mixture of gases, including nitrogen, oxygen, argon, carbon dioxide, and water vapor. The concept of mixtures, especially invisible mixtures, are abstract for students and difficult to describe and understand accurately. Teachers should plan their language of instruction carefully to avoid inadvertently reinforcing misconceptions.

**Key points for instruction:**

Common usage of the terms *material* and *stuff* may surface during discussions with students about matter. “Although the word *stuff* may not be accepted as a scientific word, it has tangible connotations for students and therefore is useful for developing the idea that there are different kinds of ‘stuff’ with different properties.” (Keeley, 2013) Students may also use the term *material* to mean the component pieces of an object—for example, fabrics are made of smaller material. (Driver, et. al., 1994) Students may also classify only things that they can feel (i.e., that have “felt weight”) as being matter. Many students may believe that gases are not matter because they cannot feel their weight and/or describe and classify matter based upon the weight of the samples at hand.

Consider reading more about common misconceptions and key points for instruction offered by Ohio State University’s College of Education and Human Ecology: [Common Misconceptions about States and Changes of Matter](#). The OSU project, *Beyond Penguins and Polar Bears*, is an excellent resource for teachers to learn more about misconceptions and broader implications for learning about a [variety of scientific topics](#).

### Potential Objectives for this Grade 1 Unit

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

#### Beginning

- Describe characteristics of matter
- Identify common features found among solids (2-ESS2-3)
- Describe characteristics of liquids (2-PS1-4 and 2-ESS2-3)
- Describe water vapor (2-PS1-4 and 2-ESS2-3)

#### Middle

- Develop a method by which we can classify matter (2-PS1-1)
- Classify different kinds of matter by their observable properties (2-PS1-1)
- Describe how physical properties of matter can be measured

#### End

- Measure objects using nonstandard units
- Determine when objects should be measured in inches or feet
- Compare the volume of pints, quarts, and gallons
- Describe how measuring the temperature helps us in our everyday lives

### Potential Big Guiding Questions

#### Essential Questions:

- **What are physical properties of matter?**
- **How can measuring properties of matter help us describe and classify objects?**

#### RE: States of Matter

- How do we describe objects?
- How do you think the ice cubes (a solid) changed into a liquid?
- Where are ice cubes stored? Why do you think that is important?
- How is the shape of liquids different from solids?

#### RE: Measurement

- How can we measure matter?
- Why are standards of measure important?
- This object is very long/short—should we measure it in inches or feet?
- Why can't we measure water with a ruler?
- Do solids have volume?
- What are some items you may buy from the grocery store that come in gallon/quart?
- Why would we want to measure the temperature?

### Potential Assessment Opportunities

The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.

#### Example: (End of Unit 5)

**{Evaluates Student Mastery of Objectives: Determine when objects should be measured in inches or feet and Measure objects using non-standard units}**

#### Advance Preparation:

- Clearly label “measuring stations” around your classroom — items in the classroom that you would like students to measure (e.g., a pencil, a desk, a table, chart paper, eraser for a chalkboard or whiteboard, a book, etc.).
- Place in a folder/envelope approximately 9–12 non-standard “inch” measuring tools (i.e., paper cut-outs measuring one inch each) for each small group of students.
- Place in a folder/envelope approximately 4–5 non-standard “foot” measuring tools (i.e., paper cut-outs measuring one foot each) for each small group of students (Consider printing these “foot” measuring tools in a different color than the “inch” measuring tools.).
- Create an assessment handout for students to 1) identify the measuring tool used, 2) record the object’s (approximate) measurements in non-standard units, and 3) describe their rationale using pictures, phrases, or sentences. **Note:** Since these are real objects around your room, the expected student answers will not measure exactly to “x” number of inches or feet. Therefore, it will be important to explain to students that their measurements are approximations. They should only include the whole number of inches or feet that fit within the object—refraining from going over.
- Acquire a notebook or note-taking sheet to record student responses/descriptions (i.e., why they decided to measure their object in feet or inches).

**Task Assessment:** Invite students to measure different items in the classroom in feet or inches and to use the assessment handout to record their measurements and thinking.

Provide each small group of students with both a set of “inch” measuring tools and a set of “feet” measuring tools. Assign, or ask students to select, items they wish to measure in small groups. Once students are positioned at their stations, ask them to determine if they should measure the objects in inches or feet, and then measure the items using the corresponding tools. As necessary, remind students (or model) how to line up the measuring tools in order to accurately measure the objects. As you rotate and meet with each group, ask them to explain their rationales for measuring in feet or inches. The goal is for students to recognize that items that appear to be longer (i.e., longer than one foot) can be easily measured with a longer measuring tool—in feet. Likewise, if the object appears short in length, it may be easier to try a shorter measurement tool—inches. If students try to measure long objects in inches, ask

them to think about the benefit to measuring in feet (e.g., they can measure in feet more quickly because they would need fewer “feet” than “inches” to measure the entire objects, so they are less likely to make errors, etc.). Allow students the opportunity to rotate to different stations and record their findings for various objects. Be sure to meet with each group as they work.

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction where it would be delivered. Aligned NGSS are noted in parentheses.*

#### **Example #1: (End of Unit 5 )**

**{Contributes to the Objective: Measure objects using non-standard units}**

**Activity:** Show the students two sets of sentence strips. Ask them to describe what they see. One set is comprised of sentence strips that are all the exact same length. The other group contains strips of different lengths.

**T - What do you notice about these two groups of strips?** (Students should indicate that each strip in the first pile is the same length and the lengths differ in the second pile.)

**T - Let’s measure the length an object, and see what happens when I measure it using units of the same length compared to units of varying lengths.**

Using a long strip of paper (e.g., a sentence strip) explain that you will model how to use a measuring tool to accurately measure the length of an object. Begin by lining up the edge of the sentence strip with the edge of an object, then place a second sentence strip right up against where the first ended. Continue until you have measured the full length of the object. Ask the students to count the strips.

**T - How many sentence strips did we use? That means that the object is x sentence strips long. Let’s see what happens when I measure using strips of varying lengths.** (Repeat the process from above.)

**T - What happened?** (Students should indicate that they recorded two different lengths [ x sentence strips long and x sentence strips long]).

Using student volunteers, repeat this process with a different pile of sentence strips (same size as the first) and another pile with different sizes. Use this second opportunity to model how to appropriately measure objects.

**T - What happened the second time? Which measurement stayed the same, which was different?**

Encourage students to think about problems that might arise if people were to measure objects (e.g., furniture, building materials, property lines, etc.) using units of different lengths.

**T - We are going to take turns measuring similar objects using paper clips, which are all the same length. What should happen?** (Students should indicate that their measurements should all be the same)



Conduct the activity. As students work, rotate around the room to provide feedback and support. After students have had the opportunity to measure several objects, ask them to share the length of each object in paper clips. If some groups arrived at different measurements, lead students in a discussion to brainstorm how this could have happened (e.g., students may not have properly lined up the paper clips, overlapped paper clips, etc.).

### Example #2: (End of Unit 5)

**{Contributes to the Objective: Compare the volume of pints, quarts, and gallons}**

**Advance Preparation:** In order to complete this activity students will need to have access to water, measuring tools (i.e., cup[s], pint[s], quart[s], and gallon[s], a writing utensil, and a recording sheet [see examples]).

|          |               |
|----------|---------------|
| 1 cup    |               |
| 1 pint   | = ____ cups   |
| 1 quart  | = ____ pints  |
| 1 gallon | = ____ quarts |

**Activity:** Invite children to investigate the relationship between cups, pints, quarts, and gallons. Provide children with a measuring cup and a pint, a quart, and a gallon container as well as a recording sheet and writing utensil. Ask them to fill the cup with water and transfer the water to the pint. Tell them to continue this until the pint is full. Have them note the number of cups it took to fill the pint on their recording sheet. Next have them pour the water from the pint into the quart. Encourage them to fill the pint with water and transfer it to the quart until the quart is full. Again ask them to record the number of pints it took to fill the quart. They can then repeat this process to see how many quarts it takes to fill a gallon.

## Websites & Media

### Images of the States of Matter:

Multimedia examples of the states of matter can be powerful discussion starters that can kickstart your students' thinking. For example, macro images of [snowflakes](#) and [water droplets](#) can offer something concrete for students to connect their learning to past experiences. You might also consider connecting this unit to your students' previous study of geysers (Unit 3 *Introduction to Geology*) by using images and/or video of a geyser such as the [Castle Geyser in Yellowstone National Park](#), to introduce or extend your discussions of gases and mixing clouds. Images and videos of [high winds](#) can also be effective examples to engage students in early discussions about invisible gases.

**BrainPop Video—The States of Matter:**

<https://www.brainpop.com/science/matterandchemistry/statesofmatter/>

Consider discussing this video with your Grade 1 students, especially the section beginning at 00:27 seconds and ending at minute 03:23. This 3-minute portion can offer your students a sneak peak into the causes of the different states of matter. While this video goes beyond the expectations of what your students will be required to explain at this grade level, it offers an excellent introduction to important vocabulary and examples that will be extended in upper elementary units, such as Grade 4 Unit 2 *Chemistry: Basic Terms & Concepts*. Be sure to consider the possible misconceptions that students may have and/or generate during this unit and craft your questions carefully to tease out what your students are thinking.

**Supplemental Trade Books**

- *How Big is a Foot?*, by Rolf Myller (Random House Children's Books, 1991). ISBN 0440404959
- *How Tall, How Short, How Faraway*, by David Adler (Holiday House, 1999). ISBN 0823416321
- *Room for Ripley*, by Stuart Murphy (HarperCollins, 1999). ISBN 0060276207
- *Super Sand Castle Saturday*, by Stuart Murphy (Harper Trophy, 1999). ISBN 0064467201
- *Twelve Snails to One Lizard: A Tale of Mischief and Measurement*, by Susan Hightower (Simon and Schuster, 1997). ISBN 0689804520

## Core Knowledge Science Program—Domain Map

### Science Content

- Introduction to static electricity
- Basic parts of simple electric circuits (for example, batteries, wire, bulb or buzzer, switch)
- Conductive and nonconductive materials
- Safety rules for electricity (for example, never put your finger, or anything metallic, in an electrical outlet; never touch a switch or electrical appliance when your hands are wet or when you're in the bathtub; never put your finger in a lamp socket; etc.)
- A biography of Thomas Edison

**This unit contributes to meeting or exceeding the following Next Generation Science Standards:**  
*Standards noted with an asterisk (\*) are those that incorporate engineering and design*

**K–2 Topic [Engineering Design](#)**, for example:

**[K-2-ETS1-2](#). Develop a simple sketch, drawing, or physical model to *illustrate how the shape of an object helps it function as needed to solve a given problem.*\***

**Rationale:**

The study of basic electrical circuits; Thomas Edison, and his development of a lightbulb will offer students the explicit opportunity to engage in this primary grade topic of engineering and design. This unit will also explore [ETS2.B](#) (Influence of Engineering, Technology, and Science on Society) which is classified by the NGSS as a cross-cutting concept (e.g., see [4-PS3-4](#)) and is a disciplinary core idea within the *Framework for K–12 Science Education* (page 212). These standards will be further addressed in Grade 2 as outlined below.

**This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:**

**[2-PS1-1](#). Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.**

**Rationale:**

Students will have the opportunity to explore and extend their knowledge of [PS1.A](#) (Structure & Properties of Matter) in a new context during this unit while classifying materials as either conductive or nonconductive. This combines with previous learning from Kindergarten (e.g., Unit 5 re: recyclable materials and Unit 6 re: objects that are or are not attracted by a magnet) to prepare students for further study of this DCI in Grade 2 (e.g., Unit 5 *Simple Machines* where students will complete a design challenge using their knowledge of the properties of matter).

|  |   |
|--|---|
| <p><b>3-PS2-3.</b> Ask questions to determine cause and effect <b>relationships of electric or magnetic interactions between two objects not in contact with each other.</b></p>   | <p><b>Rationale:</b></p> <p>Grade 1 <i>Introduction to Electricity</i>, along with several other units of the CK Science program, will engage students with the core idea <a href="#">PS2.B</a> (Types of Interactions). These units include Grade 2 Unit 4 <i>Magnetism</i>, Grade 3 Unit 5 <i>Astronomy</i>, and Grade 4 Unit 3 <i>Electricity</i>. Over time, students will explore electricity, magnetism, and gravity as forces “between a pair of objects that do not require that the objects be in contact.” (<i>Framework</i>, page 117) Examples of interactions that will be introduced in this unit are, for example, electrical forces between your hair and an electrically-charged balloon and/or a charged rod and small pieces of paper.</p> |
| <p><b>4-PS3-2.</b> Make observations to provide evidence that <b>energy can be transferred from place to place by sound, light, heat, and electric currents.</b></p> <p><b>4-PS3-4.</b> Apply scientific ideas to design, test, and <b>refine a device that converts energy from one form to another.*</b></p> | <p>The early study of electricity also offers an excellent start to the progressions for the DCIs of <a href="#">PS3.B</a> (Energy Transfer) and <a href="#">PS3.D</a> (Energy in Everyday Life). These ideas will be formally assessed by the NGSS in Grade 4, during which students are expected to understand that, “Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light.” These ideas will be extended in Grade 1 Unit 7 <i>Introduction to Light &amp; Sound</i>, during Grade 3 Unit 3 <i>Light</i> and Unit 4 <i>Sound</i>, as well as Grade 4 Unit 3 <i>Electricity</i>.</p>   |

### Potential Skills & Cross-Curricular Integrations

*The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen the understanding of this domain.*

#### POTENTIAL CCSS Math Connections

[MP.2](#) Reason abstractly and quantitatively. (*K-2-ETS1-1 and K-2-ETS1-3*)

[MP.4](#) Model with mathematics. (*K-2-ETS1-1 and K-2-ETS1-3*)

[MP.5](#) Use appropriate tools strategically. (*K-2-ETS1-1 and K-2-ETS1-3*)

1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (*K-2-ETS1-1 and K-2-ETS1-3*)

#### POTENTIAL CCSS ELA Connections

RI.1.1 Ask and answer questions about key details in a text. (*K-2-ETS1-1*)

W.1.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (*K-2-ETS1-1 and K-2-ETS1-3*)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (*K-2-ETS1-1 and K-2-ETS1-3*)

SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. (*K-2-ETS1-2*)

#### POTENTIAL Cross-Curricular Connections

##### Potential Link:

**ELA:** Sayings & Phrases—“If at first you don’t succeed, try, try again.” (*This saying is particularly applicable during the study of Thomas Edison’s work and when learning about his approach to the process of design and invention. For example, it has been reported by a close friend of Edison’s that—after nine thousand attempts to design an improved storage battery—the friend asked, “Isn’t it a shame that with the tremendous amount of work you have done you haven’t been able to get any results?” To which Edison replied, “Results! Why, man, I have gotten a lot of results! I know several thousand things that won’t work.”*)

**American History:** Benjamin Franklin: patriot, inventor, writer (*Franklin’s inventions included the lightning rod to protect houses from catching fire when struck by lightning.*)

### Prior Knowledge

#### Core Knowledge Kindergarten Sequence

##### IV. Introduction to Magnetism

- Magnetism is a property of matter
- Identify familiar everyday uses of magnets (for example, in toys, in cabinet locks, in “refrigerator magnets,” etc.)
- Classify materials according to whether they are or are not attracted by a magnet

##### VI. Taking Care of the Earth

- Some materials can be recycled (for example, aluminum, glass, paper)

**CKLA Kindergarten****Domain Anthology, *Taking Care of the Earth***

- Identify common recyclable materials, including glass, plastic, aluminum, cardboard, and paper

**Core Knowledge Science** (Previously taught units in the CK Science program)**Kindergarten****Unit 5 *Taking Care of the Earth***

- Identify everyday objects that are made up of natural resources
- Classify resources as renewable or nonrenewable
- Classify objects as recyclable or as garbage

**Unit 6 *Pushes, Pulls, and an Introduction to Magnets***

- Describe different ways magnets are used in everyday life
- Classify materials according to whether they are or are not attracted by a magnet
- Apply your knowledge of forces and magnets to solve a problem

**Grade 1 Unit 5 *Matter & Its Properties***

- Describe characteristics of matter
- Identify common features found among solids (2-ESS2-3)
- Develop a method by which we can classify matter (2-PS1-1)
- Classify different kinds of matter by their observable properties (2-PS1-1)
- Describe how physical properties of matter can be measured
- Measure objects using nonstandard units
- Determine when objects should be measured in inches or feet

**CKLA Grade 1 Objectives—Not Applicable**

*The Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain [domains of literature, science, and history](#), does not include the study of electricity. In order to prepare students to meet or exceed the NGSS Grade 2 Topic [Structure & Properties of Matter](#), this unit (as well as Grade 2 Unit 5 Simple Machines) is critical to advance students' understanding of the physical sciences. To learn more about how and why the Listening & Learning Strand of CKLA approaches certain science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*

**What Students Will Learn in Future Grades****Core Knowledge Sequence****Grade 2 Magnetism**

- Magnetism demonstrates that there are forces we cannot see that act upon objects

**Grade 3 Astronomy**

- Gravity, gravitational pull:  
Gravitational pull of the moon (and to a lesser degree, the sun) causes ocean tides on earth  
Gravitational pull of “black holes” prevents even light from escaping

**Grade 4 Electricity**

- Electricity as the charge of electrons
- Static electricity
- Electric current
- Electric circuits, and experiments with simple circuits (battery, wire, light bulb, filament, switch, fuse)
- Closed circuit, open circuit, short circuit
- Conductors and insulators
- Electromagnets: how they work and common uses
- Using electricity safely

**Grade 4 Chemistry—Atoms and Elements**

- All matter is made up of particles too small for the eye to see, called atoms
- Scientists have developed models of atoms; while these models have changed over time as scientists make new discoveries, the models help us imagine what we cannot see
- Atoms are made up of even tinier particles: protons, neutrons, electrons
- The concept of electrical charge:  
Positive charge (+): proton  
Negative charge (-): electron  
Neutral (neither positive nor negative): neutron  
“Unlike charges attract, like charges repel” (relate to magnetic attraction and repulsion)
- Elements are the basic kinds of matter, of which there are a little more than one hundred
- There are many different kinds of atoms, but an element has only one kind of atom
- Familiar elements, such as gold, copper, aluminum, oxygen, iron
- Most things are made up of a combination of elements

**Core Vocabulary**

The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

### Electricity

**energy**, charge, **source**, electron, static, buildup, **change**, friction, positive, negative, **attract**, **repel**, opposite, alike, release, discharge, electrical, **current**, path, circuit, flow, closed, series, parallel, wire, generator, **battery**, cell, terminal, contact, touch, fuse, (non)conductive, insulator, conductor, switch, on, off, device, appliance, [examples of appliances that use electricity]

### Thomas Edison

**engineer**, **design**, develop, build, problem, question, laboratory, **investigate**, test, trial, success, fail, **persistence**, error, **criteria**, invention, lightbulb, lamp, drawing, sketch, **model**, transform, transfer, energy, heat, light, dark, burn, bright, **filament**, bamboo, platinum, metal

### Safety with Electricity

precaution, safety, **hazard**, dangerous, **shock**, electrocute, **caution**, harmful, hurt, careful, rules, warning, habit, socket, outlet, plug, cord, wires, conductor, appliance, current, flow, metal, water, wet, lightning, storm

## Potential Misconceptions

*Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.*

### Misconception: “Thomas Edison invented the electric lightbulb.”

Historians agree that Edison did not invent the first electric lightbulb as others had succeeded as early 1802, almost eight decades before Edison’s seminal design. He did, however, produce the [first commercially-viable model of a lightbulb](#) after his extensive experimentation to identify a long-lasting filament that was affordable and safe—a carbonized bamboo filament that replaced his earlier designs.

### Misconception: “All electric currents are flows of electrons.”

Electric currents are caused by the flow of any charged particle, ions, that contain an imbalance of protons or electrons. In fact, commonly used electric currents that depend on the flow of positive charged ions include fluorescent bulbs, neon signs, and battery acid. Electric currents in salt water are also due to the flow of “extra” protons.



Edison’s design using carbonized Japanese bamboo, which replaced earlier models using platinum and which could “burn” for over 1200 hours, is recognized as a key development that transformed how (and for how long) humans interact with each other and their world after dark.

**Misconception: “Electricity and power are the same thing.”**

The NRC *Framework for K–12 Science Education* points out that, “Young children are likely to have difficulty studying the concept of energy in depth—everyday language surrounding energy contains many shortcuts that lead to misunderstandings.” (pg. 94) The terms *power* and *energy* have specific scientific meanings that most young students have not experienced or learned in depth. The focus of this unit will directly align with the elementary learning progressions about energy and electricity set out by the *Framework*, specifically by the disciplinary core ideas of [PS2.B](#) (Types of Interactions), [PS3.B](#) (Energy Transfer), and [PS3.D](#) (Energy in Everyday Life).

**Misconception: “Batteries and generators are the source of an electric current.”**

This statement is an overgeneralization because batteries and generators do not supply ions or electrons, but rather **energy** to an electric circuit. Specifically, an electrochemical cell supplies the energy needed to move a charge from a low potential location to a high potential location. The particles that move are, in fact, found in the components of the circuits, such as the wires, *even before the battery is connected!*

**Key points for instruction:**

Students of all ages have difficulty accurately describing the phenomena of electricity, and energy in general (*Framework*, pages 94–96 and 128–130). The focus of this early grade unit should be on macroscopic phenomena with which young students can engage meaningfully (e.g., examples of static electricity, building and using simple electric circuits, and safety with electricity). This unit will intentionally foreshadow the technical explanations of electric currents and related vocabulary, but students are not expected to explain the exact science at this early age.

### Potential Objectives for this Grade 1 Unit

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Describe how electricity impacts our everyday life
- Identify actions that keep us safe around electricity
- Describe the effect of static electricity
- Describe how objects repel and attract

**Middle**

- Distinguish between electric charges that repel and electric charges that attract
- Compare and contrast open and closed circuits
- Classify objects as insulators or conductors
- Describe characteristics of materials that act as conductors and materials that act as insulators

**End**

- Describe how Thomas Edison’s inventions are used today
- Identify problems that could be solved with new or improved tools
- Develop a tool (model or illustration) that can be used to solve an identified problem
- Describe how a tool can be used to solve an identified problem

**Potential Big Guiding Questions****Essential Questions:**

- **What kinds of materials conduct electricity?**
- **What can you do to use electricity safely?**

## Re: Electricity in Everyday Life:

- Why is electricity important to us?
- How can we stay safe around electricity?

## Re: Static Electricity:

- How are magnetic poles similar to electric charges?
- If two objects have the same electric charge, do you think they will attract or repel? Why?

## Re: Electric Current and Circuits:

- Can an electric current flow through a gas or a liquid?
- What happens when there is a gap in a circuit?

## Re: Conductors and Insulators:

- Do you think electricity can flow through any object?
- What do you notice about the material of most conductors? How are they different from materials that serve as insulators?

## Re: Thomas Edison

- How do Thomas Edison’s inventions resemble some of the tools and technology we use today?
- Why is persistence an important trait for scientists?

**Potential Assessment Opportunities**

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.*

**Example #1: (Middle of Unit 6)**

**{Evaluates Student Mastery of Objective:** Classify objects as insulators or conductors}

**Advance Preparation:** You will need to acquire the following items in order to create a simple circuit:

- Three wires
- A battery
- A light bulb
- Several “everyday items” made up of different materials (e.g., bar of soap, copper penny, piece of silverware, wooden block, etc.)
- Pieces of folded cardstock (e.g., resembling a “table tent”). One labeled, “insulator” and the other labeled, “conductor.”

**Assessment Task:** Set up the circuit, attaching one wire to the negative terminal (on the battery) and a separate wire to the light bulb. Attach the free ends of the two wires to one of the metal “everyday items.” Ask the students to think about what they learned regarding open and closed circuits, and share what’s happening. If students need support, ask questions that guide them to the realization that the light bulb glows because electricity is flowing through the (open) circuit. Now repeat the experiment with a non-metal object (e.g., wooden block).

**T - Our circuit appears closed. The wires are attached to the battery, light bulb, and** (object name). **Why isn’t the light turning on? What changed?** (Provide students with at least 30 second of think time, and then hear ideas.) **The object that I attached to the wires changed.**

**T -** (Holding up the metal object) **Electricity was able to flow through this object, but** (holding up the wooden object) **it was not able to flow through this one. When electricity is permitted to flow through an object, that object is called a conductor.** (Place the metal object on a table, visible to students, in front of the cardstock labeled, “conductor.”) **If the object does not allow electricity to flow through it is called an insulator.** (Place the object by the “insulator” cardstock.)

**T - We are going to “test” each of these remaining items. I need you to tell me if the object is working as a conductor or insulator and we will categorize them into their respective groups.**

### Potential Activities & Procedures

*The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction where it would be delivered. Aligned NGSS are noted in parentheses.*

#### **Example #1: (Beginning of Unit 6)**

**{Contributes to the Objective: Describe how electricity impacts our everyday life}**

**Activity:** Invite students to record the number of electrical devices they use on a daily basis. Explain that any device that runs on batteries or that is plugged into the wall uses electricity to work. Children can also record how long they use each device. Encourage children to then imagine a time before electricity was available. Remind them that none of the devices they recorded could be used before electricity was available. What would their lives be like? How might their daily routines be different? How would they

listen to music? Where would they find their entertainment? How would they read at night, wash clothes, or keep food from going bad?

**Example #2: (Beginning of Unit 6)**

**{Contributes to the Objective:** Distinguish between electric charges that repel and electric charges that attract}

**Advance Preparation:**

- **Fill multiple balloons with air** (one for you and one for every student or pair of students).
  - Before the start of the lesson, model for students how to handle balloons appropriately.
- **Acquire two magnets**

**Activity:** Provide each child (or pair of children) with a balloon. Ask them to touch the balloon to the classroom wall and let it go..

**T - What happened?** (The balloon fell to the floor.) **I want you to rub the balloon against your hair like this.** (Model then allow students approximately 10–20 seconds to do the same.) **We are going to try to place the balloon near the wall. What do you think is going to happen?** (Listen to several responses. Encourage students to explain their thinking.) **Now place your balloon near the wall.**

Children will see that the balloons stick to the wall.

**T - What happened? Why do you think the balloon stuck to the wall?** (Encourage students to explain their thinking.)

**T - This was caused by static electricity. What do you think created the static electricity?** (If students need guidance, ask them to think about what they did differently between the first time they placed the balloon by the wall and the second time--rubbing the balloon on hair.) **That built a charge on the balloon.**

Hand two students magnets.

**T - What did we learn happens when we tried to place the two magnets together?** Students should indicate that they repelled each other (Have students with the magnets model this effect.)

**T - Similar poles repel. The balloon fell** (model again) **because it and the wall exert the same charge.**

**T - But after we rubbed the balloon on our hair, it stuck to the wall. What does that tell us?**

Students should conclude that the balloon and wall had different charges because the balloon stuck to the wall—they were attracted.

### Websites & Media

**YouTube video for teachers—Plastic Comb Rubbed With a Cotton Cloth Attracts Small Pieces of Paper:** <https://youtu.be/rtI9TyMZSP8>

This short video (approximately 1.5 minutes) offers an example of a demonstration that you might conduct with your young students. Consider using this sort of anchoring event to engage them with the concept of electrical charge and static electricity.

### Supplemental Trade Books

- *The Magic School Bus and the Electric Field Trip* by Joanna Cole and Bruce Degen (Scholastic, 1999) ISBN 0590446835
- *Switch On, Switch Off* by Melvin Berger (HarperTrophy, 2001) ISBN 006445097X

*Recommended by the National Science Teachers Association*

- Teacher Resource: *Energy—Stop Faking It! Finally Understanding Science So You Can Teach It* by William C. Robertson (NSTA, 2002) ISBN 9780873552141

## Core Knowledge Science Program—Domain Map

### Science Content

#### Light

- Objects can be seen if light is available to illuminate them or if they give off their own light
- Light travels from place to place
- Transparent, translucent, and opaque objects:  
Some materials allow light to pass through them, others allow only some light through, and others block the light and create shadows on any surface on the other side where direct light cannot reach
- Mirrors and prisms can be used to redirect a light beam

#### Sound

- Sound can make matter vibrate
- Vibrating matter can make sound
- Introduction to sound waves

### ***This unit contributes to meeting or exceeding the following Next Generation Science Standards:***

**Grade 1 Topic [Waves: Light & Sound](#), for example:**

**[1-PS4-1](#). Plan and conduct investigations to provide evidence that **vibrating materials can make sound and that sound can make materials vibrate**. AND**

**[1-PS4-3](#). Plan and conduct investigations to determine **the effect of placing objects made with different materials in the path of a beam of light**.**

This unit will support students as they develop early understandings of the core ideas [PS4.B](#) (Electromagnetic Radiation), [PS4.A](#) (Wave Properties), and [PS4.C](#) (Information Technologies). This unit “bundles” these core ideas as found in this Grade 1 Topic from the NGSS. For example, the idea that light travels from place to place, which is an early progression of PS4.B, will be developed through experiences with light sources, mirrors, and shadows cast by various objects.

### ***This unit offers the opportunity to foreshadow learning that will support the following Next Generation Science Standards:***

**Grade 4 Topic [Waves](#), for example:**

**[4-PS4-1](#). Develop a model of waves to describe patterns in terms of **amplitude and wavelength and that waves can cause objects to move**.**

[PS4.A](#), [PS4.B](#), and [PS4.C](#) will each be studied further in Grade 3 during Units 3 and 4, *Light* and *Sound* respectively. This early study of these core ideas in Grade 1 will prepare students with the vocabulary and background knowledge so that they can build upon and apply their understandings of waves during upper elementary activities and assessments.

### Potential Skills & Cross-Curricular Integrations

The connections listed below are intended as ideas for possible integration across this unit. Finding connections in math, in language arts, and in works of poetry, art, and music, may help you as you create meaningful learning experiences for your students. Connections such as these can help your students make links between various disciplines and deepen the understanding of this domain.

#### POTENTIAL CCSS Math Connections

MP.5 Use appropriate tools strategically. (1-PS4-4)

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)

1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4)

#### POTENTIAL CCSS ELA Connections

W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)

W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1, 1-PS4-2, 1-PS4-3, and 1-PS4-4)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1, 1-PS4-2, and 1-PS4-3)

SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1, 1-PS4-2, and 1-PS4-3)

#### POTENTIAL Cross-Curricular Connections

##### Potential Links:

**Visual Art:** Elements of Art—Color; review from Kindergarten the idea of “warm” and “cool” colors. Know that red, yellow, and blue are commonly referred to as the “primary colors,” and that combinations of these colors can produce green, orange, and purple. Observe the use of color in:

- Claude Monet’s *Tulips in Holland*
- James A. McNeill Whistler’s *Arrangement in Black and Gray* (also known as *Whistler’s Mother*)
- Diego Rivera’s *Piñata*

**Music:** Elements of Music—Discriminate between obvious differences in pitch: high and low. Discriminate between loud and soft (volume/intensity). Become familiar with the families of instruments in an orchestra: strings, brass, woodwinds, percussion.

### Prior Knowledge

#### **Core Knowledge Preschool Sequence**

Scientific Reasoning and the Physical World

*Goal: Demonstrate an initial understanding of the living world*

- Observe, describe and record some basic properties of light, its presence and its effects in the physical world

#### **Core Knowledge Kindergarten Sequence**

V. Seasons & Weather

- The sun: source of light and warmth

**Core Knowledge Science** (Previously taught units in the CK Science program)

#### **Kindergarten Unit 4 Seasons & Weather**

- Describe how the sun affects the temperature
- Describe how sunlight affects materials on Earth (K-PS3-1)

### CKLA Grade 1 Objectives—Not Applicable

*The Core Knowledge Language Arts program (CKLA), which builds students' background knowledge in certain [domains of literature, science, and history](#), does not include the study of light and sound at this grade level. In order to prepare students to meet or exceed the NGSS Grade 1 Topic [Waves: Light & Sound](#), this CK Science unit is critical to advance students' understanding of the physical sciences. To learn more about how and why the Listening & Learning Strand of CKLA approaches certain science content through read-alouds and ELA instruction, [read more about the CKLA program](#).*



### What Students Will Learn in Future Grades

#### **Core Knowledge Grade 3 Sequence**

#### **II. The Human Body—Vision and Hearing**

Vision: How the Eye Works

- Parts of the eye: cornea, iris and pupil, lens, retina
- Optic nerve
- Farsighted and nearsighted

Hearing: How the Ear Works

- Sound as vibration
- Outer ear, ear canal, and eardrum
- Three tiny bones (hammer, anvil, and stirrup) pass vibrations to the cochlea
- Auditory nerve

#### **III. Light and Optics**

- Through experimentation and observation, introduce children to some of the basic physical phenomena of light, with associated vocabulary
- The speed of light: light travels at an amazingly high speed
- Light travels in straight lines (as can be demonstrated by forming shadows)
- Transparent and opaque objects
- Reflection:  
Mirrors: plane, concave, convex  
Uses of mirrors in telescopes and some microscopes
- The spectrum: use a prism to demonstrate that white light is made up of a spectrum of colors
- Lenses can be used for magnifying and bending light (as in magnifying glass, microscope, camera, telescope, binoculars)

#### **IV. Sound**

- Through experimentation and observation, introduce children to some of the basic physical phenomena of sound, with associated vocabulary
- Sound is caused by an object vibrating rapidly
- Sounds travel through solids, liquids, and gases
- Sound waves are much slower than light waves
- Qualities of sound:  
Pitch: high or low, faster vibrations = higher pitch, slower vibrations = lower pitch  
Intensity: loudness and quietness
- Human voice:  
Larynx (voice box)  
Vibrating vocal cords: longer, thicker vocal cords create lower, deeper voices
- Sound and how the human ear works
- Protecting your hearing

### Core Vocabulary

The following list contains the core vocabulary words suggested for purposeful integration across this Grade 1 unit. **Boldfaced** terms could be introduced and/or reviewed with students using a Word Work activity, as modeled by the [Core Knowledge Language Arts program](#) (CKLA). The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure across the lessons, students should acquire a good understanding of most of these words and begin to use some in conversation.

#### Light

sunlight, ray, **beam**, path, direction, straight, source, shine, **illuminate**, bright, emit, energy, type, travel, transmit, wave, rainbow, prism, [names of different colors], mirror, surface, **reflect**, refract, absorb, bounce, deflect, bend, angle, reflection, image, **transparent**, **translucent**, **opaque**, obscure, fuzzy, blur, clear, sharp, object, matter, media, shadow, shade, cast, dark, silhouette, eclipse

#### Sound

wave, **compression**, energy, matter, **medium**, **substance**, quality, characteristic, **description**, **pitch**, frequency, intensity, **volume**, loud, soft, high, low, **vibrate**, vibration, noise, [examples of objects that make noise]

### Potential Misconceptions

Students have been shown to learn significantly more science when their teachers demonstrate strong knowledge of potential student errors, and when the teacher plans accordingly (Sadler & Sonnert, 2016). The following incorrect statements serve as a sampling of the “intuitive theories” or “alternative conceptions” that students and teachers may actively use to describe their thinking, and which might interfere with the process of learning. The details following each statement are not intended to imply the scope of instruction for this grade, but instead provide a clearer sense of what students (of all ages) often misunderstand and/or overgeneralize when investigating and describing scientific ideas.

#### **Misconception: “The heat of the sun is transferred to the Earth.”**

This is an overgeneralization that students of all ages often repeat and misunderstand. Thermal energy from the sun does not reach the Earth in any significant amount. Instead, it is the electromagnetic radiation emitted from the sun, sunlight, that traverses the expanse of space and provides energy to the Earth and its atmosphere. This includes wavelengths of radiation that are invisible to the eye, such as infrared, ultraviolet

#### **Key points for instruction:**

“The majority of elementary students... tend to identify light with its source (e.g., light is in the bulb) or its effects (e.g., patch of light)” (AAAS Atlas of Science Literacy Vol. 1, 2001, pg. 64). These students generally have difficulty explaining reflections, for example color as the reflection of light, and/or the direction and formation of shadows.

(UV), and gamma radiation. This electromagnetic radiation interacts with our atmosphere, and with the Earth, in a [complex system of energy transfer](#), which results in the natural warming of the Earth. For more information, consider watching this short YouTube video (~3-minutes) provided by Duane Friend of the University of Illinois Extension: [How the Sun Heats the Earth](#).

**Key Points for Instruction: (continued)**

The focus of this unit is for students to engage in hands-on learning activities and assessments to interact with light and sound as they can experience it in the real world. The [Next Generation Science Standards reference examples](#) such as tuning forks, stretched strings, clear plastics, translucent wax paper, and reflective mirrors be used to engage students in evidence-based discussions about sound and light.

**Potential Objectives for this Grade 1 Unit**

*The organization of the following objectives reflects the order in which they are expected to be addressed. The proposed timing within the unit (“beginning,” “middle,” or “end”) and aligned NGSS are also noted. In addition to daily lessons focused on each objective, days have been built into the unit for review and assessment.*

**Beginning**

- Describe how the presence of light affects objects (1-PS4-2)
- Describe how light travels
- Describe materials that block light and materials that allow light to pass through (1-PS4-3)

**Middle**

- Identify objects that reflect light (1-PS4-3)
- Compare and contrast light and sound waves (**ongoing**)

**End**

- Describe the relationship between vibrations and sound (1-PS4-1)
- Design a device that uses light or sound to communicate over a distance (1-PS4-4)

**Potential Big Guiding Questions****Essential Questions:**

- **What causes a shadow?**
- **How does light travel?**
- **What causes sound?**

**RE: Light**

- Why can't we see in the dark?
- Do you think light can travel through water? Why?
- Why do some objects block light, but not others?

RE: Sound

- How are sound waves different from light waves?
- Can sound make an object vibrate?
- Can a vibration make a sound?

### Potential Assessment Opportunities

*The following assessment tasks serve as a sampling of how students can demonstrate mastery of lesson objectives. Each aligned objective and NGSS is noted in parentheses. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point in time the assessment would take place.*

#### **Example #1: (Beginning of Unit 7)**

**{Evaluates Student Mastery of Objective: Describe materials that block light and materials that allow light to pass through}** (1-PS4-3)

**Advance Preparation: See example #2 in the next section.**

#### **Assessment Task:**

Walk students through the investigation steps they established as a class. Provide each group with needed materials (e.g., flashlight, objects, and category cards).

**T - At your table you have a flashlight and several objects. When I cue you to begin, I would like you to take turns following the steps of our investigation** (e.g., shining your flashlight on each object, looking carefully at the amount of light coming through each object, categorizing the objects).

Dim the lights and allow students time to shine their flashlights on each object.

**T - What did you notice?** (Students should identify that some objects allow light to pass through and others do not)

As a whole group debrief findings. If students disagree about to which category an object belongs, model for the group, calling students’ attention to the amount of light passing through. You may also want to compare the object with one from another category (e.g., compare a transparent and translucent object).

Ask students to look at the objects that block the light and share what they notice.

**T - What are the characteristics of these objects? Why do you think light cannot pass through them?** After students share their observations and thinking, explain that these objects are opaque.

Repeat this process with the other two categories (transparent and translucent).

**T - So, what happens when objects made of different materials are placed in front of a beam of light?**

### Potential Activities & Procedures

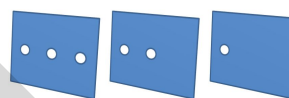
The following activities or procedures serve as a sampling of what instruction could look like in this unit. Each example was specifically designed to contribute to one or more of the aforementioned objectives. In addition, the proposed timing (“beginning,” “middle,” or “end”) is noted in order to indicate the approximate point of instruction where it would be delivered. Aligned NGSS are noted in parentheses.

#### Example #1: (Beginning of Unit 7)

{Contributes to the Objective: Describe how light travels}

**Advance Preparation:** You will need the following materials in order to conduct this activity:

- Three pieces of cardstock or large index cards. Layer the cards and punch a hole on the far left side. Remove one card from the pile and punch a hole in the middle of the remaining two. Then punch a hole (on the far right side) in only one of the two cards (see diagram).
- Three balls of playdough or putty. Use the playdough or putty to stand each of the cards up on a table. Position the cards so the holes on the far left of each card all align.
- Flashlight lights for each pair (or small group of students)



**Activity: Explain that today you will learning about how light travels.**

**T - How many of you have ever used a flashlight before? Take a minute and think about what that light looks like (where it goes) when you or another person turns on a flashlight.**

**Let’s make predictions about how light travels.** If students have difficulty describing their ideas, provide prompts (e.g., do you think it moves in squiggly or straight lines? Do you think it remains uniform as it travels or changes shape?).

Provide each pair (or small group) of students with a flashlight. Review safety directions (e.g., never point the flashlight in someone’s eyes). Position students around the perimeter of the room (between 2 and 3 feet from the wall). Dim the lights in the classroom. Instruct one member from each group or pair to turn on the flashlight and point it at the wall. Ask the remaining students (standing on the side) to look at the beam of light and describe what they see.

**T - Look at the light coming from your flashlight. How far does it travel (across the room)? What does its path look like? Where does it stop?**

Collect the flashlights and ask students to stand on the sides of the table where you have propped the index cards.

**T - I’m going to shine this small flashlight on this first card. I want you to take a close look at how the light travels.**

Turn on the flashlight. Students should see one straight beam of light stream through all three cards on the far left, they should see another beam of light travel through the middle and stop at the last card, and observe one beam of light (on the far right) shine through the first card, stopping at the second.

**T- Turn to your partner and describe what the light looks like.** Provide students with at least 60 seconds to talk and then ask several pairs to share their descriptions. **What are characteristics that we can clearly see here, but may not have been as clear when we shined our flashlights on the wall?** Students should indicate that the light is traveling in a straight line, and that it keeps moving until something blocks it.

**Example #2: (Beginning of Unit 7)**

**{Contributes to the Objective: Describe materials that block light and materials that allow light to pass through}** (1-PS4-3)

**Advance Preparation:** You will need the following materials in order to conduct this activity:

- 2 transparent objects (e.g., glasses, plastic wrap, paper protector, or water) for each group of students
- 2 translucent objects (e.g., sunglasses, notebook paper, wax paper, plastic bag, stained glass, a lampshade, or vegetable oil) for each group of students
- 2 opaque objects (e.g., cardboard, book, aluminum paper, carpet/fabric, or metal spoon/knife) for each group of students
- A flashlight for each group of students
- Index cards, paper, post-it notes, and other materials that students may decide to use in order to conduct the investigation.

**Activity:**

**T - What do you think happens to a beam of light if you place an object directly in front of it? Do you think objects made of different materials would cause different results?** As you pose each question, allow students think-time to process. Ask them to explain their reasoning.

**T - Today we are going to form an investigation to find out what happens when objects made of different materials are placed in front of a beam of light.** Write the question on a piece of chart paper, “What happens when objects made of different materials are placed in front of a beam of light?” You may also wish to draw a symbol representing this question.

**T - What would we need to conduct this investigation (to answer this question)?** Ask students to share ideas with a partner and then call on several pairs to share. List students’ ideas on the chart paper. Guide and prompt students to think of what could act as the “source of light” (e.g., a flashlight), brainstorming an array of objects, and determining how they categorize or organize the objects. If students brainstorm objects in the classroom of which you have multiple sets, use that item instead of one that you already prepared.

Place a set of objects along with a flashlight in front of students. Ask students to describe what they think the steps should be to answer the question. As students list their ideas, capture them on chart paper.

After the class has compiled a list of steps, ask students to assist with reordering/combining steps. Try to limit the list to five to seven steps. Rewrite the steps on a new piece of chart paper. . .

### Websites & Media

**YouTube video for teachers—How the Sun Heats the Earth:**

[https://www.youtube.com/watch?v=dg\\_DOM1OQoo](https://www.youtube.com/watch?v=dg_DOM1OQoo)

This short video (approximately 3 minutes) offers an illustrated explanation of how the Earth is actually heated by the Sun.

**Science Netlinks Lesson offered free by the AAAS—The Warmth of the Sun:**

<http://sciencenetlinks.com/lessons/the-warmth-of-the-sun/>

This model lesson is offered for free download by the American Academy for the Advancement of Science (AAAS) through its Science Netlinks program. This activity can provide additional support to students as they address early learning objectives within this unit (e.g., Describe how the presence of light affects objects, *1-PS4-2*). Students observe and record the relative temperature of water located in three different locations: inside the classroom, outside in the

### Supplemental Trade Books

*Recommended by the National Science Teachers Association*

- *Light: Shadows, Mirrors, and Rainbows* by Natalie M. Roslinsky and Sheree Boyd (Picture Window Books, 2002) ISBN 9781404803329
- *Light and Color* by Lawrence F. Lowery and Muriel Wood (NSTA Kids, 2014) ISBN 9781938946516
- Teacher Resource: *Energy—Stop Faking It! Finally Understanding Science So You Can Teach It* by William C. Robertson (NSTA, 2002) ISBN 9780873552141

**Standards Edition, Earlybird Kindergarten Mathematics © 2008**  
 correlated to the Common Core State Standards for Mathematics

\*Key: TB = Textbook, AB = Activity Book

| Standards  | Descriptor  | Page Citations   |
|--|---|--|
| <b>Counting and Cardinality</b>                  |   | <b>K.CC</b>  |
| <b>Know number names and the count sequence.</b> |   |  |
| <b>1</b>   | Count to 100 by ones and by tens.   | <b>TB-A:</b> 22-53, 54-85<br><b>AB-A:</b> 8-15, 16-25<br><b>TB-B:</b> 19-32, 94-111, 145-157<br><b>AB-B:</b> 18-27, 71-77, 86-93 |
| <b>2</b>   | Count forward beginning from a given number within the known sequence (instead of having to begin at 1.)  | <b>TB-A:</b> 94-97<br><b>AB-A:</b> 28-29<br><b>TB-B:</b> 1-2, 29-30, 53-54, 108-109<br><b>AB-B:</b> 25-27, 45-47, 75-77          |
| <b>3</b>   | Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).  | <b>TB-A:</b> 37-53, 54-85<br><b>AB-A:</b> 8-15, 16-25<br><b>TB-B:</b> 19-28<br><b>AB-B:</b> 18-24                                |
| <b>Count to tell the number of objects.</b>      |   |  |
| <b>4</b>   | Understand the relationship between numbers and quantities; connect counting to cardinality.  |  |
| <b>a</b>   | When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.   | <b>TB-A:</b> 22-33, 54-71<br><b>AB-A:</b> 8, 16-21   |
| <b>b</b>   | Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.   | <b>TB-A:</b> 28-35, 54-55, 58-75<br><b>AB-A:</b> 8, 16-21  |
| <b>c</b>   | Understand that each successive number name refers to a quantity that is one larger.  | <b>TB-A:</b> 86-97<br><b>AB-A:</b> 26-29<br><b>TB-B:</b> 1-8, 29-30<br><b>AB-B:</b> 25-27  |
| <b>5</b>   | Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. | <b>TB-A:</b> 22-47, 54-85<br><b>AB-A:</b> 8-15, 16-25<br><b>TB-B:</b> 19-28<br><b>AB-B:</b> 18-24                                |



| <b>Standards</b>  | <b>Descriptor</b>   | <b>Page Citations</b>  |
|---|---|--|
| <b>Compare numbers.</b>   |   |  |
| <b>6</b>  | Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.  | <b>TB-A:</b> 199–208<br><b>AB-A:</b> 82–91<br><b>TB-B:</b> 1–10, 19–20                           |
| <b>7</b>  | Compare two numbers between 1 and 10 presented as written numerals.   | <b>TB-B:</b> 11–16<br><b>AB-B:</b> 2–17  |
| <b>Operations and Algebraic Thinking</b>  |   | <b>K.OA</b>  |
| <b>Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.</b> |   |  |
| <b>1</b>  | Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.   | <b>TB-B:</b> 33–48, 49–64, 65–84, 85–88<br><b>AB-B:</b> 28–39, 40–53, 54–61, 62–70               |
| <b>2</b>  | Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.  | <b>TB-B:</b> 33–48, 49–64, 65–72, 75–82, 85–93<br><b>AB-B:</b> 28–39, 40–53, 54–55, 58–61, 62–70 |
| <b>3</b>  | Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$ ).  | <b>TB-B:</b> 33–48<br><b>AB-B:</b> 28–39   |
| <b>4</b>  | For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.   | <b>TB-B:</b> 46<br><b>AB-B:</b> 37–39  |
| <b>5</b>  | Fluently add and subtract within 5.   | <b>TB-B:</b> 33–38, 49–50, 65–70<br><b>AB-B:</b> 28–33, 40–44, 54–55                             |
| <b>Number and Operations in Base Ten</b>  |   | <b>K.NBT</b>   |
| <b>Work with numbers 11–19 to gain foundations for place value.</b>   |   |  |
| <b>1</b>  | Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$ ); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. | <b>TB-B:</b> 21–28<br><b>AB-B:</b> 18–24   |

| <b>Standards</b>   | <b>Descriptor</b>  | <b>Page Citations</b>   |
|--|--|---|
| <b>Measurement and Data</b>  |  | <b>K.MD</b>   |
| <b>Describe and compare measurable attributes.</b>   |  |   |
| <b>1</b>   | Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.  | <b>TB-A:</b> 147-154, 164-165, 175-176, 180-182, 185-186<br><b>AB-A:</b> 57-62, 66, 71-73 |
| <b>2</b>   | Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.  | <b>TB-A:</b> 155-169, 177-179, 187-188<br><b>AB-A:</b> 63-65, 67-70, 74-80                |
| <b>Classify objects and count the number of objects in each category.</b>  |  |   |
| <b>3</b>   | Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.  | <b>TB-A:</b> 1-8, 15-16, 30-33, 51-53, 62-63, 110-111<br><b>AB-A:</b> 1-5, 7              |
| <b>Geometry</b>  |  | <b>K.G</b>  |
| <b>Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres.)</b> |  |   |
| <b>1</b>   | Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as <i>above</i> , <i>below</i> , <i>beside</i> , <i>in front of</i> , <i>behind</i> , and <i>next to</i> .                                      | <b>TB-A:</b> 110-136<br><b>AB-A:</b> 33-45  |
| <b>2</b>   | Correctly name shapes regardless of their orientations or overall size.  | <b>TB-A:</b> 110-136<br><b>AB-A:</b> 33-45  |
| <b>3</b>   | Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").  | <b>TB-A:</b> 110-136<br><b>AB-A:</b> 33-45  |
| <b>Analyze, compare, create, and compose shapes.</b>   |  |   |
| <b>4</b>   | Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). | <b>TB-A:</b> 110-146<br><b>AB-A:</b> 33-45  |
| <b>5</b>   | Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.   | <b>TB-A:</b> 110-136<br><b>AB-A:</b> 33-45  |
| <b>6</b>   | Compose simple shapes to form larger shapes. <i>For example, "Can you join these two triangles with full sides touching to make a rectangle?"</i>  | <b>TB-A:</b> 118-119<br><b>AB-A:</b> 35-38  |

## Standards Edition, Primary Mathematics © 2008

correlated to the Common Core State Standards for Mathematics

\*Key: TB = Textbook, WB = Workbook

| Standards   | Descriptor   | Page Citations  |
|---|--|---|
| <b>Operations and Algebraic Thinking</b>  |  | <b>1.OA</b>   |
| <b>Represent and solve problems involving addition and subtraction.</b>                                     |  |   |
| <b>1</b>  | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.  | <b>TB-A:</b> 27-38, 42-50, 70-74<br><b>WB-A:</b> 25-32, 34-36, 43-51, 64-66, 101-113, 120, 127, 129-131, 183, 185-186<br><b>TB-B:</b> 7-15<br><b>WB-B:</b> 13-18, 71, 197-199 |
| <b>2</b>  | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.  | <b>TB-B:</b> 44-45<br><b>WB-B:</b> 63-64, 66  |
| <b>Understand and apply properties of operations and the relationship between addition and subtraction.</b> |  |   |
| <b>3</b>  | Apply properties of operations as strategies to add and subtract. <i>Examples: If <math>8 + 3 = 11</math> is known, then <math>3 + 8 = 11</math> is also known. (Commutative property of addition.) To add <math>2 + 6 + 4</math>, the second two numbers can be added to make a ten, so <math>2 + 6 + 4 = 2 + 10 = 12</math>. (Associative property of addition.)</i> | <b>TB-A:</b> 32, 50, 70-74<br><b>WB-A:</b> 32-33, 40, 47-48, 53-54, 102-106, 108-113, 116-122<br><b>TB-B:</b> 44-45<br><b>WB-B:</b> 63-65                                     |
| <b>4</b>  | Understand subtraction as an unknown-addend problem. <i>For example, subtract <math>10 - 8</math> by finding the number that makes 10 when added to 8.</i>   | <b>TB-A:</b> 24-25, 38, 66<br><b>WB-A:</b> 20-24, 107, 110  |
| <b>Add and subtract within 20.</b>  |  |   |
| <b>5</b>  | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).   | <b>TB-A:</b> 35-37, 51-53, 75<br><b>WB-A:</b> 36-39, 57-58, 114-115<br><b>TB-B:</b> 46-47   |

| <b>Standards</b>                                     | <b>Descriptor</b>   | <b>Page Citations</b>  |
|--|---|--|
| <b>6</b>   | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$ ); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$ ); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$ , one knows $12 - 8 = 4$ ); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$ ). | <b>TB-A:</b> 35–37, 40, 50–52, 55, 70–78<br><b>WB-A:</b> 36–39, 53–55, 57–58, 81, 101–115, 120                   |
| <b>Work with addition and subtraction equations.</b> |   |  |
| <b>7</b>   | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. <i>For example, which of the following equations are true and which are false? <math>6 = 6</math>, <math>7 = 8 - 1</math>, <math>5 + 2 = 2 + 5</math>, <math>4 + 1 = 5 + 2</math>.</i>   | <b>TB-A:</b> 27<br><b>WB-A:</b> 86, 119  |
| <b>8</b>   | Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$ , $5 = ? - 3$ , $6 + 6 = ?$ .  | <b>TB-A:</b> 38, 66<br><b>WB-A:</b> 107, 110   |
| <b>Number and Operations in Base Ten</b>             |   | <b>1.NBT</b>   |
| <b>Extend the counting sequence.</b>                 |   |  |
| <b>1</b>   | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.  | <b>TB-B:</b> 22, 25, 28, 85–87, 91–93<br><b>WB-B:</b> 30, 37–38, 68, 134–135, 142, 147–149 (Numbers to 100 only) |
| <b>2</b>   | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:   |  |
| <b>a</b>   | 10 can be thought of as a bundle of ten ones — called a “ten.”  | <b>TB-A:</b> 25, 62–66<br><b>WB-A:</b> 23–24, 89–92  |
| <b>b</b>   | The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.   | <b>TB-A:</b> 62–66, 70–72<br><b>WB-A:</b> 89–92, 94–95, 189–190  |
| <b>c</b>   | The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).  | <b>TB-A:</b> 63<br><b>TB-B:</b> 22–23, 25, 35, 76–79, 85<br><b>WB-B:</b> 130–132                                 |
| <b>3</b>   | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$ , $=$ , and $<$ .  | <b>TB-B:</b> 29, 89–90<br><b>WB-B:</b> 39, 150–152   |

| <b>Standards</b>   | <b>Descriptor</b>  | <b>Page Citations</b>   |
|--|--|---|
| <b>Use place value understanding and properties of operations to add and subtract.</b> |  |   |
| <b>4</b>   | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. | <b>TB-A:</b> 70–73, 76<br><b>WB-A:</b> 102–107<br><b>TB-B:</b> 34–35, 38–41, 82, 85, 87–88, 92–99<br><b>WB-B:</b> 42, 44–57, 139–140, 147, 149, 153–166 |
| <b>5</b>   | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.   | <b>TB-B:</b> 34–35, 38, 85, 87–88<br><b>WB-B:</b> 42–44, 47–48, 144–149, 217  |
| <b>6</b>   | Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.   | <b>TB-B:</b> 38<br><b>WB-B:</b> 171–174   |
| <b>Measurement and Data</b>  |  | <b>1.MD</b>   |
| <b>Measure lengths indirectly and by iterating length units.</b>                       |  |   |
| <b>1</b>   | Order three objects by length; compare the lengths of two objects indirectly by using a third object.  | <b>TB-A:</b> 91–94<br><b>WB-A:</b> 151–153, 195   |
| <b>2</b>   | Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. <i>Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.</i>  | <b>TB-A:</b> 95–96<br><b>WB-A:</b> 154–156, 196   |
| <b>Tell and write time.</b>  |  |   |
| <b>3</b>   | Tell and write time in hours and half-hours using analog and digital clocks.   | <b>TB-B:</b> 68–72<br><b>WB-B:</b> 115–122, 225   |
| <b>Represent and interpret data.</b>   |  |   |
| <b>4</b>   | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.   | <b>TB-B:</b> 16–21<br><b>WB-B:</b> 19–29  |

| <b>Standards</b>                                | <b>Descriptor</b>  | <b>Page Citations</b>   |
|---|--|---|
| <b>Geometry</b>                                 |  | <b>1.G</b>  |
| <b>Reason with shapes and their attributes.</b> |  |   |
| <b>1</b>  | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.  | <b>TB-A:</b> 83–90<br><b>WB-A:</b> 132–135, 137, 141–148, 193   |
| <b>2</b>  | Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.   | <b>TB-A:</b> 89–90<br><b>WB-A:</b> 149, 194<br><b>WB-B:</b> 224 |
| <b>3</b>  | Partition circles and rectangles into two and four equal shares, describe the shares using the words <i>halves</i> , <i>fourths</i> , and <i>quarters</i> , and use the phrases <i>half of</i> , <i>fourth of</i> , and <i>quarter of</i> . Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. | <b>TB-B:</b> 66–67<br><b>WB-B:</b> 109–114, 223                 |

## Standards Edition, Primary Mathematics © 2008

correlated to the Common Core State Standards for Mathematics

\*Key: TB = Textbook, WB = Workbook

| Standards  | Descriptor   | Page Citations   |
|--|--|--|
| <b>Operations and Algebraic Thinking</b>   |  | <b>2.OA</b>  |
| <b>Represent and solve problems involving addition and subtraction.</b>          |  |  |
| <b>1</b>   | Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. | <b>TB-A:</b> 24–31, 43–46, 55–56, 58, 89, 101–102<br><b>WB-A:</b> 31–32, 36–37, 45, 81, 86, 174<br><b>TB-B:</b> 8–12, 100, 137<br><b>WB-B:</b> 114 |
| <b>Add and subtract within 20.</b>   |  |  |
| <b>2</b>   | Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.  | <b>TB-A:</b> 24–27<br><b>WB-A:</b> 31–33<br><b>TB-B:</b> 8–9   |
| <b>Work with equal groups of objects to gain foundations for multiplication.</b> |  |  |
| <b>3</b>   | Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.  | <b>TB-A:</b> 105–107<br><b>WB-A:</b> 115–116<br><b>WB-B:</b> 143<br><br><b>See Grade 3:</b><br><b>TB-A:</b> 97                                     |
| <b>4</b>   | Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.   | <b>TB-A:</b> 90, 92<br><b>WB-A:</b> 96, 99   |
| <b>Number and Operations in Base Ten</b>   |  | <b>2.NBT</b>   |
| <b>Understand place value.</b>   |  |  |
| <b>1</b>   | Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:  |  |
| <b>a</b>   | 100 can be thought of as a bundle of ten tens — called a “hundred.”  | <b>TB-A:</b> 13–15<br><b>WB-A:</b> 15, 17, 24  |
| <b>b</b>   | The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).   | <b>TB-A:</b> 13, 15  |
| <b>2</b>   | Count within 1000; skip-count by 5s, 10s, and 100s.  | <b>TB-A:</b> 9, 13–16<br><b>WB-A:</b> 7–8, 12, 15, 17<br><b>TB-B:</b> 30–31, 34<br><b>WB-B:</b> 43, 49, 143  |

| <b>Standards</b>   | <b>Descriptor</b>  | <b>Page Citations</b>   |
|--|--|---|
| <b>3</b>   | Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.   | <b>TB-A:</b> 8-19, 23<br><b>WB-A:</b> 9-11, 15-23, 25, 28-29, 87  |
| <b>4</b>   | Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.  | <b>TB-A:</b> 20-21, 23<br><b>WB-A:</b> 24-25, 29  |
| <b>Use place value understanding and properties of operations to add and subtract.</b> |  |   |
| <b>5</b>   | Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.  | <b>TB-A:</b> 24-31<br><b>WB-A:</b> 31-37<br><b>TB-B:</b> 8-13<br><b>WB-B:</b> 7-12, 18-19   |
| <b>6</b>   | Add up to four two-digit numbers using strategies based on place value and properties of operations.   | <b>TB-A:</b> 24-26, 28-29, 31, 33<br><b>WB-A:</b> 9, 14, 31, 34, 36-38, 47<br><b>TB-B:</b> 8, 10-16<br><b>WB-B:</b> 7-9, 12, 15-16, 23<br>(Adding up to 3 numbers, including 3-digit numbers) |
| <b>7</b>   | Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. | <b>TB-A:</b> 24-57<br><b>WB-A:</b> 31-67<br><b>TB-B:</b> 8-20<br><b>WB-B:</b> 7-25  |
| <b>8</b>   | Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.   | <b>TB-A:</b> 12, 22-23, 74-75, 126<br><b>WB-A:</b> 12-14, 26-27, 30<br><b>TB-B:</b> 14-19<br><b>WB-B:</b> 15-25   |
| <b>9</b>   | Explain why addition and subtraction strategies work, using place value and the properties of operations (explanations may be supported by drawings or objects.)   | <b>TB-A:</b> 24-37, 39-45, 47-54<br><b>WB-A:</b> 32, 36, 38, 42<br><b>TB-B:</b> 8-20<br><b>WB-B:</b> 7  |



| <b>Standards</b>                                       | <b>Descriptor</b>  | <b>Page Citations</b>   |
|--|--|---|
| <b>Measurement and Data</b>                            |  | <b>2.MD</b>   |
| <b>Measure and estimate lengths in standard units.</b> |  |   |
| <b>1</b>   | Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.  | <b>TB-A:</b> 61–62, 65–75<br><b>WB-A:</b> 73–75, 78, 80   |
| <b>2</b>   | Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.  | <b>TB-A:</b> 59–60, 71, 73, 126<br><b>WB-A:</b> 72, 186   |
| <b>3</b>   | Estimate lengths using units of inches, feet, centimeters, and meters.   | <b>TB-A:</b> 63, 67<br><b>WB-A:</b> 75–78   |
| <b>4</b>   | Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.  | <b>TB-A:</b> 64–65, 68, 72<br><b>WB-A:</b> 74, 76, 78   |
| <b>Relate addition and subtraction to length.</b>      |  |   |
| <b>5</b>   | Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.             | <b>TB-A:</b> 64–65, 68, 74–75, 101, 125–126<br><b>WB-A:</b> 88, 91, 174<br><b>WB-B:</b> 90                |
| <b>6</b>   | Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.                                    | <b>TB-B:</b> 108–110<br><b>WB-A:</b> 157, 159–160<br><br><b>See Grade 1:</b><br><b>TB-A:</b> 16–17, 51–53 |
| <b>Work with time and money.</b>                       |  |   |
| <b>7</b>   | Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.  | <b>TB-B:</b> 76–79<br><b>WB-B:</b> 115–121  |
| <b>8</b>   | Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.<br><i>Example: If you have 2 dimes and 3 pennies, how many cents do you have?</i>   | <b>TB-B:</b> 45–48<br><b>WB-B:</b> 67, 72–74  |
| <b>Represent and interpret data.</b>                   |  |   |
| <b>9</b>   | Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. | <b>TB-A:</b> 60, 63, 67, 69   |

| <b>Standards</b>                                | <b>Descriptor</b>  | <b>Page Citations</b>   |
|---|--|---|
| <b>10</b>                                       | Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.  | <b>TB-B:</b> 101–102<br><b>WB-B:</b> 149<br><br><b>See Grade 1:</b><br><b>TB-B:</b> 16–21<br><b>WB-B:</b> 19–29 |
| <b>Geometry</b>                                 |  | <b>2.G</b>  |
| <b>Reason with shapes and their attributes.</b> |  |   |
| <b>1</b>  | Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.   | <b>TB-B:</b> 116–119, 125–126<br><b>WB-B:</b> 168–173, 181–182  |
| <b>2</b>  | Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.   | <b>See Grade 3:</b><br><b>TB-B:</b> 139–144<br><b>WB-B:</b> 163–166   |
| <b>3</b>  | Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words <i>halves</i> , <i>thirds</i> , <i>half of</i> , <i>a third of</i> , etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. | <b>TB-B:</b> 62–64<br><b>WB-B:</b> 92–93  |

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\*Key: TB = Textbook, WB = Workbook

| Standards  | Descriptor  | Page Citations  |
|--|---|---|
| <b>Operations and Algebraic Thinking</b>                                   |   | <b>3.OA</b>   |
| <b>Represent and solve problems involving multiplication and division.</b> |   |   |
| <b>1</b>   | Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>  | <b>TB-A:</b> 69–71, 75, 111–112, 117–119, 124–125, 128<br><b>WB-A:</b> 66–71, 111   |
| <b>2</b>   | Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe a context in which a number of shares or a number of groups can be expressed as <math>56 \div 8</math>.</i> | <b>TB-A:</b> 72–73, 76, 78<br><b>WB-A:</b> 72–73  |
| <b>3</b>   | Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  | <b>TB-A:</b> 69–71, 75–81<br><b>WB-A:</b> 67–68, 79–81, 181<br><b>TB-B:</b> 57, 62, 64, 110, 126<br><b>WB-B:</b> 27, 45               |
| <b>4</b>   | Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations <math>8 \times ? = 48</math>, <math>5 = \_ \div 3</math>, <math>6 \times 6 = ?</math>.</i>   | <b>TB-A:</b> 69–73, 76, 78–79, 112–113, 116, 118–120, 124, 126, 128–129<br><b>WB-A:</b> 71–77, 95, 113–115, 122–124, 132–134, 141–142 |

| <b>Standards</b>   | <b>Descriptor</b>   | <b>Page Citations</b>   |
|--|---|---|
| <b>Understand properties of multiplication and the relationship between multiplication and division.</b> |   |   |
| <b>5</b>   | Apply properties of operations as strategies to multiply and divide.<br><i>Examples: If <math>6 \times 4 = 24</math> is known, then <math>4 \times 6 = 24</math> is also known. (Commutative property of multiplication.) <math>3 \times 5 \times 2</math> can be found by <math>3 \times 5 = 15</math>, then <math>15 \times 2 = 30</math>, or by <math>5 \times 2 = 10</math>, then <math>3 \times 10 = 30</math>. (Associative property of multiplication.) Knowing that <math>8 \times 5 = 40</math> and <math>8 \times 2 = 16</math>, one can find <math>8 \times 7</math> as <math>8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56</math>. (Distributive property.)</i> | <b>TB-A:</b> 70, 72–73, 84, 108–109, 111–113, 118–120, 124, 128–130, 133–134<br><b>WB-A:</b> 67, 69, 73, 111, 150–151                   |
| <b>6</b>   | Understand division as an unknown-factor problem. <i>For example, find <math>32 \div 8</math> by finding the number that makes 32 when multiplied by 8.</i>   | <b>TB-A:</b> 72–73, 113<br><b>WB-A:</b> 72–77   |
| <b>Multiply and divide within 100.</b>   |   |   |
| <b>7</b>   | Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.  | <b>TB-A:</b> 68–81, 108–113, 117–120, 124–125, 128–130<br><b>WB-A:</b> 66–67, 73–77, 104, 111–114, 117, 122–124, 127, 132–133, 141–142  |
| <b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b>    |   |   |
| <b>8</b>   | Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.   | <b>TB-A:</b> 62–64, 67, 79–81<br><b>WB-A:</b> 59–61, 64–65, 82–85, 131, 140, 149<br><b>TB-B:</b> 45, 63, 126, 137<br><b>WB-B:</b> 45–46 |
| <b>9</b>   | Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i>  | <b>TB-A:</b> 15–17, 111–112, 118–119, 124, 128–130<br><b>WB-A:</b> 14–16, 68, 71, 104, 156  |
| <b>Number and Operations in Base Ten</b>   |   | <b>3.NBT</b>  |
| <b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b>     |   |   |
| <b>1</b>   | Use place value understanding to round whole numbers to the nearest 10 or 100.  | <b>TB-A:</b> 18–23<br><b>WB-A:</b> 17–20  |

| <b>Standards</b>                                      | <b>Descriptor</b>   | <b>Page Citations</b>  |
|---|---|--|
| <b>2</b>  | Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.   | <b>TB-A:</b> 27–40, 45–49, 62–63<br><b>WB-A:</b> 26–38, 42–47,<br><b>TB-B:</b> 27<br><b>WB-B:</b> 44                             |
| <b>3</b>  | Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., $9 \times 80$ , $5 \times 60$ ) using strategies based on place value and properties of operations.   | <b>TB-A:</b> 82–84, 92, 109<br><b>WB-A:</b> 86, 88, 150  |
| <b>Number and Operations—Fractions</b>                |   | <b>3.NF</b>  |
| <b>Develop understanding of fractions as numbers.</b> |   |  |
| <b>1</b>  | Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by $a$ parts of size $1/b$ .  | <b>TB-B:</b> 85–87<br><b>WB-B:</b> 90–95   |
| <b>2</b>  | Understand a fraction as a number on the number line; represent fractions on a number line diagram.   |  |
| <b>a</b>  | Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. | <b>See Grade 4:</b><br><b>TB-A:</b> 79<br><b>WB-A:</b> 70  |
| <b>b</b>  | Represent a fraction $a/b$ on a number line diagram by marking off $a$ lengths $1/b$ from 0. Recognize that the resulting interval has size $a/b$ and that its endpoint locates the number $a/b$ on the number line.  | <b>See Grade 4:</b><br><b>TB-A:</b> 79<br><b>WB-A:</b> 70  |
| <b>3</b>  | Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.   |  |
| <b>a</b>  | Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.   | <b>TB-B:</b> 91–96<br><b>WB-B:</b> 104–107   |
| <b>b</b>  | Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$ , $4/6 = 2/3$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.   | <b>TB-B:</b> 91–96<br><b>WB-B:</b> 100–107   |
| <b>c</b>  | Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form <math>3 = 3/1</math>; recognize that <math>6/1 = 6</math>; locate <math>4/4</math> and 1 at the same point of a number line diagram.</i>     | <b>TB-B:</b> 85–86, 93<br><b>WB-B:</b> 90–93, 101–102<br><b>See Grade 4:</b><br><b>TB-A:</b> 90–93<br><b>WB-A:</b> 79, 82–83, 86 |

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|---|---|---|
| <b>d</b>  | Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.                 | <b>TB-B:</b> 88–89<br><b>WB-B:</b> 96–97  |
| <b>Measurement and Data</b>   |   | <b>3.MD</b>   |
| <b>Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</b> |   |   |
| <b>1</b>  | Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.   | <b>TB-B:</b> 112–115<br><b>WB-B:</b> 123–126  |
| <b>2</b>  | Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. | <b>TB-B:</b> 30–31, 48–50<br><b>WB-B:</b> 28–29, 49–50<br><br><b>See Grade 2:</b><br><b>TB-B:</b> 90–94<br><b>WB-B:</b> 139–140 |
| <b>Represent and interpret data.</b>  |   |   |
| <b>3</b>  | Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>                               | <b>TB-A:</b> 140–143<br><b>WB-A:</b> 162–167<br><br><b>See Grade 2:</b><br><b>TB-B:</b> 101–113<br><b>WB-B:</b> 148–161         |
| <b>4</b>  | Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.   | <b>See Grade 2:</b><br><b>TB-B:</b> 72–73   |
| <b>Geometric measurement: understand concepts of area and relate area to multiplication and to addition.</b>            |   |   |
| <b>5</b>  | Recognize area as an attribute of plane figures and understand concepts of area measurement.  |   |
| <b>a</b>  | A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.   | <b>TB-B:</b> 139–143<br><b>WB-B:</b> 159–166  |

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| <b>b</b>   | A plane figure which can be covered without gaps or overlaps by $n$ unit squares is said to have an area of $n$ square units.  | <b>TB-B:</b> 139–146<br><b>WB-B:</b> 159–169                        |
| <b>6</b>   | Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).  | <b>TB-B:</b> 139–146<br><b>WB-B:</b> 159–169                        |
| <b>7</b>   | Relate area to the operations of multiplication and addition.  |   |
| <b>a</b>   | Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.  | <b>See Grade 4:</b><br><b>TB-A:</b> 141–144<br><b>WB-A:</b> 162–163 |
| <b>b</b>   | Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.   | <b>See Grade 4:</b><br><b>TB-A:</b> 141–144<br><b>WB-A:</b> 162–164 |
| <b>c</b>   | Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.  | <b>TB-A:</b> 111–112, 118–119, 124, 128, 130                        |
| <b>d</b>   | Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.   | <b>See Grade 4:</b><br><b>TB-A:</b> 151–155<br><b>WB-A:</b> 172–174 |
| <b>Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.</b> |  |   |
| <b>8</b>   | Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. | <b>TB-B:</b> 147–150<br><b>WB-B:</b> 170–172                        |

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| <b>Geometry</b>                                 |  | <b>3.G</b>  |
| <b>Reason with shapes and their attributes.</b> |  |   |
| <b>1</b>  | Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. | <b>TB-B:</b> 129, 132–133<br><b>WB-B:</b> 146–152 |
| <b>2</b>  | Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</i>  | <b>TB-B:</b> 86–87<br><b>WB-B:</b> 90, 92–95      |



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| Standards  | Descriptor  | Page Citations  |
|--|---|---|
| <b>Operations and Algebraic Thinking</b>                             |   | <b>4.OA</b>   |
| <b>Use the four operations with whole numbers to solve problems.</b> |   |   |
| <b>1</b>   | Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.  | <b>TB-A:</b> 59, 64, 67<br><br><b>See Grade 3:</b><br><b>TB-A:</b> 77-79, 84, 91<br><b>WB-A:</b> 84-85    |
| <b>2</b>   | Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.  | <b>TB-A:</b> 59-60, 64-67, 73<br><b>WB-A:</b> 54, 66, 114, 160<br><b>TB-B:</b> 32, 92<br><b>WB-B:</b> 40  |
| <b>3</b>   | Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. | <b>TB-A:</b> 51, 57-60, 64-67<br><b>WB-A:</b> 49-50, 54-55, 66, 112-114, 116<br><b>WB-B:</b> 40, 103, 117 |
| <b>Gain familiarity with factors and multiples.</b>                  |   |   |
| <b>4</b>   | Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.  | <b>TB-A:</b> 26-37<br><b>WB-A:</b> 21-27  |

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| <b>Generate and analyze patterns.</b>  |   |   |
| <b>5</b>   | Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i> | <b>TB-A:</b> 17, 33<br><b>WB-A:</b> 15<br><b>TB-B:</b> 97-99<br><b>WB-B:</b> 111-112  |
| <b>Number and Operations in Base Ten</b>   |   | <b>4.NBT</b>  |
| <b>Generalize place value understanding for multi-digit whole numbers.</b>                           |   |   |
| <b>1</b>   | Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>For example, recognize that <math>700 \div 70 = 10</math> by applying concepts of place value and division.</i>  | <b>TB-A:</b> 19, 62-63, 68-70, 72<br><b>WB-A:</b> 17-18<br><br><b>See Grade 3:</b><br><b>TB-A:</b> 82-84<br><b>WB-A:</b> 86-88<br><b>See Grade 5:</b><br><b>TB-A:</b> 23-27<br><b>WB-A:</b> 18-19 |
| <b>2</b>   | Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.   | <b>TB-A:</b> 8-15, 21<br><b>WB-A:</b> 7-12, 15  |
| <b>3</b>   | Use place value understanding to round multi-digit whole numbers to any place.  | <b>TB-A:</b> 22-24<br><b>WB-A:</b> 19-20  |
| <b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b> |   |   |
| <b>4</b>   | Fluently add and subtract multi-digit whole numbers using the standard algorithm.   | <b>TB-A:</b> 51-58<br><b>WB-A:</b> 40-50  |
| <b>5</b>   | Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.  | <b>TB-A:</b> 59, 61, 65, 67-72<br><b>WB-A:</b> 51, 53, 56-61<br><br><b>See Grade 3:</b><br><b>TB-A:</b> 82-91<br><b>WB-A:</b> 86-97   |
| <b>6</b>   | Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.   | <b>TB-A:</b> 60, 62-64, 66-67<br><b>WB-A:</b> 52-53<br><br><b>See Grade 3:</b><br><b>TB-A:</b> 94-103<br><b>WB-A:</b> 98-103  |

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| <b>Number and Operations—Fractions</b>   |   | <b>4.NF</b>  |
| <b>Extend understanding of fraction equivalence and ordering.</b>  |   |  |
| <b>1</b>   | Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.  | <b>TB-A:</b> 77–80<br><b>WB-A:</b> 67–70   |
| <b>2</b>   | Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model. | <b>TB-A:</b> 79–80<br><b>WB-A:</b> 70, 87<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 95–96<br><b>WB-B:</b> 108                       |
| <b>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.</b> |   |  |
| <b>3</b>   | Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$ .  |  |
| <b>a</b>   | Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.   | <b>TB-A:</b> 81–87<br><b>WB-A:</b> 71–76<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 97–101<br><b>WB-B:</b> 109–114                   |
| <b>b</b>   | Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. <i>Examples:</i><br>$3/8 = 1/8 + 1/8 + 1/8$ ; $3/8 = 1/8 + 2/8$ ;<br>$2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$ .  | <b>TB-A:</b> 88–92<br><b>WB-A:</b> 77–85<br><br><b>See Grade 2:</b><br><b>TB-B:</b> 67<br><b>See Grade 3:</b><br><b>TB-B:</b> 85, 97 |
| <b>c</b>   | Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.  | <b>TB-A:</b> 88–89, 92–93<br><b>WB-A:</b> 77–78, 83–85   |
| <b>d</b>   | Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.   | <b>TB-A:</b> 81–82, 87<br><b>WB-A:</b> 75–76<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 97, 99, 101                                  |

| <b>Standards</b>   | <b>Descriptor</b>   | <b>Page Citations</b>  |
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| <b>4</b>   | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.  |  |
| <b>a</b>   | Understand a fraction $a/b$ as a multiple of $1/b$ . For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$ , recording the conclusion by the equation $5/4 = 5 \times (1/4)$ .  | <b>See Grade 5:</b><br><b>TB-A:</b> 64–66<br><b>WB-A:</b> 60–63  |
| <b>b</b>   | Understand a multiple of $a/b$ as a multiple of $1/b$ , and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$ , recognizing this product as $6/5$ . (In general, $n \times (a/b) = (n \times a)/b$ .)   | <b>TB-A:</b> 98–100<br><b>WB-A:</b> 91–97<br><br><b>See Grade 5:</b><br><b>TB-A:</b> 69–70<br><b>WB-A:</b> 62–63 |
| <b>c</b>   | Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? | <b>TB-A:</b> 101–105<br><b>WB-A:</b> 98–109  |
| <b>Understand decimal notation for fractions, and compare decimal fractions.</b> |   |  |
| <b>5</b>   | Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express $3/10$ as $30/100$ , and add $3/10 + 4/100 = 34/100$ .   | <b>TB-B:</b> 17–18<br><b>WB-B:</b> 19–20   |
| <b>6</b>   | Use decimal notation for fractions with denominators 10 or 100. For example, rewrite $0.62$ as $62/100$ ; describe a length as $0.62$ meters; locate $0.62$ on a number line diagram.   | <b>TB-B:</b> 8–10, 12, 14–19<br><b>WB-B:</b> 7–9, 12, 19–20  |
| <b>7</b>   | Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual model.  | <b>TB-B:</b> 21–22<br><b>WB-B:</b> 25–26   |

| Standards  | Descriptor  | Page Citations   |
|--|---|--|
| <b>Measurement and Data</b>  |   | <b>4.MD</b>  |
| <b>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</b> |   |  |
| <b>1</b>   | Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. <i>For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...</i> | <b>TB-B:</b> 129<br><b>WB-B:</b> 144-145<br><br><b>See Grade 2:</b><br><b>TB-A:</b> 61-69, 76-87<br><b>TB-B:</b> 90-94<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 8-10, 13-15, 20-22, 26, 30-32, 41-42, 49-54, 57-60, 62   |
| <b>2</b>   | Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.   | <b>TB-A:</b> 40, 56, 58, 65, 67, 80, 97, 102, 104-105, 109, 140, 159, 161<br><b>WB-A:</b> 49-50, 55, 66, 75, 78, 98-99, 101-103, 105-109, 112-113, 115-116, 158-159, 161, 179, 183<br><b>TB-B:</b> 10-11, 14, 28-30, 34-35, 45-49, 58, 73, 90, 92, 104, 124, 128, 130-136, 147-148, 151<br><b>WB-B:</b> 11, 39-40, 80, 103-104, 117-118, 120, 142-143, 156-160 |
| <b>3</b>   | Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i>  | <b>TB-A:</b> 141-156<br><b>WB-A:</b> 162-171   |
| <b>Represent and interpret data.</b>   |   |  |
| <b>4</b>   | Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</i>  | <b>TB-B:</b> 107-108, 111, 113<br><b>WB-B:</b> 122-123, 126  |

| <b>Standards</b>  | <b>Descriptor</b>   | <b>Page Citations</b>                                       |
|---|---|---|
| <b>Geometric measurement: understand concepts of angle and measure angles.</b>                          |   |   |
| <b>5</b>  | Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:   |   |
| <b>a</b>  | An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles.                              | <b>TB-A:</b> 110–111, 114                                   |
| <b>b</b>  | An angle that turns through $n$ one-degree angles is said to have an angle measure of $n$ degrees.  | <b>TB-A:</b> 112–115<br><b>WB-A:</b> 123–131                |
| <b>6</b>  | Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.  | <b>TB-A:</b> 112–115<br><b>WB-A:</b> 121–131                |
| <b>7</b>  | Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. | <b>TB-A:</b> 114–115<br><b>WB-A:</b> 128–131                |
| <b>Geometry</b>   |   | <b>4.G</b>  |
| <b>Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</b> |   |   |
| <b>1</b>  | Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.  | <b>TB-A:</b> 111–124<br><b>WB-A:</b> 117–124                |
| <b>2</b>  | Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.  | <b>TB-A:</b> 122–124, 126<br><b>WB-A:</b> 133, 140–141, 143 |
| <b>3</b>  | Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.  | <b>TB-B:</b> 81–86<br><b>WB-B:</b> 95–100                   |

## Standards Edition, Primary Mathematics © 2008

correlated to the Common Core State Standards for Mathematics

\*Key: TB = Textbook, WB = Workbook

| Standards   | Descriptor   | Page Citations   |
|---|--|--|
| <b>Operations and Algebraic Thinking</b>          |  | <b>5.OA</b>  |
| <b>Write and interpret numerical expressions.</b> |  |  |
| <b>1</b>  | Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.  | <b>TB-A:</b> 29–33<br><b>WB-A:</b> 22–24   |
| <b>2</b>  | Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation "add 8 and 7, then multiply by 2" as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math> without having to calculate the indicated sum or product.</i>  | <b>TB-A:</b> 29–32<br><b>WB-A:</b> 14, 22–24, 103<br><br><b>See Grade 4:</b><br><b>TB-A:</b> 41<br><b>WB-A:</b> 32 |
| <b>Analyze patterns and relationships.</b>        |  |  |
| <b>3</b>  | Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. <i>For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i> | <b>TB-B:</b> 162<br><b>WB-B:</b> 153<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 97–99<br><b>WB-B:</b> 111–112      |
| <b>Number and Operations in Base Ten</b>          |  | <b>5.NBT</b>   |
| <b>Understand the place value system.</b>         |  |  |
| <b>1</b>  | Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.   | <b>TB-A:</b> 8<br><b>TB-B:</b> 9, 23–24<br><br><b>See Grade 4:</b><br><b>TB-A:</b> 8–12<br><b>WB-A:</b> 7          |
| <b>2</b>  | Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.  | <b>TB-A:</b> 23–26<br><b>WB-A:</b> 16–19<br><b>TB-B:</b> 23–30<br><b>WB-B:</b> 14, 16–17                           |

| <b>Standards</b>  | <b>Descriptor</b>   | <b>Page Citations</b>  |
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| <b>3</b>  | Read, write, and compare decimals to thousandths.   |  |
| <b>a</b>  | Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ .   | <b>TB-B:</b> 8, 10<br><b>WB-B:</b> 5<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 12-15, 26<br><b>WB-B:</b> 15, 21, 29   |
| <b>b</b>  | Compare two decimals to thousandths based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.  | <b>TB-B:</b> 11-12<br><b>WB-B:</b> 6<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 21-22, 24-25<br><b>WB-B:</b> 25-26, 31 |
| <b>4</b>  | Use place value understanding to round decimals to any place.   | <b>TB-B:</b> 13-15<br><b>WB-B:</b> 7<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 28-30<br><b>WB-B:</b> 34-36            |
| <b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b> |   |  |
| <b>5</b>  | Fluently multiply multi-digit whole numbers using the standard algorithm.   | <b>TB-A:</b> 23-28, 35-36, 42-43, 48-49<br><b>WB-A:</b> 16-17, 27-28, 35-36, 76  |
| <b>6</b>  | Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.                     | <b>TB-A:</b> 44-48, 50<br><b>WB-A:</b> 37-40   |
| <b>7</b>  | Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.  | <b>TB-B:</b> 16-41<br><b>WB-B:</b> 8-29<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 35-67<br><b>WB-B:</b> 42-76         |
| <b>Number and Operations—Fractions</b>  |   | <b>5.NF</b>  |
| <b>Use equivalent fractions as a strategy to add and subtract fractions.</b>              |   |  |
| <b>1</b>  | Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. <i>For example, <math>2/3 + 5/4 = 8/12 + 15/12 = 23/12</math>. (In general, <math>a/b + c/d = (ad + bc)/bd</math>.)</i> | <b>TB-A:</b> 58-63, 106<br><b>WB-A:</b> 52-59, 77, 102   |



| <b>Standards</b>   | <b>Descriptor</b>  | <b>Page Citations</b>                                  |
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| <b>2</b>   | Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <i>For example, recognize an incorrect result <math>2/5 + 1/2 = 3/7</math>, by observing that <math>3/7 &lt; 1/2</math>.</i>  | <b>TB-A:</b> 60, 63, 79                                |
| <b>Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</b> |  |  |
| <b>3</b>   | Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. <i>For example, interpret <math>3/4</math> as the result of dividing 3 by 4, noting that <math>3/4</math> multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size <math>3/4</math>. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?</i> | <b>TB-A:</b> 54–57<br><b>WB-A:</b> 50–51               |
| <b>4</b>   | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.   |  |
| <b>a</b>   | Interpret the product $(a/b) \times q$ as $a$ parts of a partition of $q$ into $b$ equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ . <i>For example, use a visual fraction model to show <math>(2/3) \times 4 = 8/3</math>, and create a story context for this equation. Do the same with <math>(2/3) \times (4/5) = 8/15</math>. (In general, <math>(a/b) \times (c/d) = ac/bd</math>.)</i>   | <b>TB-A:</b> 67–75, 80–87<br><b>WB-A:</b> 64–75, 81–86 |
| <b>b</b>   | Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.  | <b>TB-A:</b> 81, 83<br><b>WB-A:</b> 80                 |

| <b>Standards</b> | <b>Descriptor</b>  | <b>Page Citations</b>                          |
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| <b>5</b>         | Interpret multiplication as scaling (resizing), by:  |  |
| <b>a</b>         | Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.   | <b>TB-A:</b> 80–87<br><b>WB-A:</b> 79–87       |
| <b>b</b>         | Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying $a/b$ by 1. | <b>TB-A:</b> 80–83<br><b>WB-A:</b> 79–82       |
| <b>6</b>         | Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.  | <b>TB-A:</b> 80–87<br><b>WB-A:</b> 80, 83–86   |
| <b>7</b>         | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.  |  |
| <b>a</b>         | Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. <i>For example, create a story context for <math>(1/3) \div 4</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>(1/3) \div 4 = 1/12</math> because <math>(1/12) \times 4 = 1/3</math>.</i>  | <b>TB-A:</b> 88–89<br><b>WB-A:</b> 87          |
| <b>b</b>         | Interpret division of a whole number by a unit fraction, and compute such quotients. <i>For example, create a story context for <math>4 \div (1/5)</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>4 \div (1/5) = 20</math> because <math>20 \times (1/5) = 4</math>.</i>   | <b>TB-A:</b> 91–92<br><b>WB-A:</b> 91–92       |
| <b>c</b>         | Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, how much chocolate will each person get if 3 people share <math>1/2</math> lb of chocolate equally? How many <math>1/3</math>-cup servings are in 2 cups of raisins?</i>   | <b>TB-A:</b> 91–92, 98, 106<br><b>WB-A:</b> 90 |

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| <b>Measurement and Data</b>  |  | <b>5.MD</b>   |
| <b>Convert like measurement units within a given measurement system.</b>   |  |   |
| <b>1</b>   | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.   | <b>TB-A:</b> 71–72<br><b>WB-A:</b> 66–69<br><b>TB-B:</b> 44–47<br><b>WB-B:</b> 34–36  |
| <b>Represent and interpret data.</b>   |  |   |
| <b>2</b>   | Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</i> | <b>TB-A:</b> 64, 99<br><b>TB-B:</b> 123<br><br><b>See Grade 3:</b><br><b>TB-A:</b> 145<br><b>See Grade 4:</b><br><b>TB-B:</b> 107–108, 111, 113<br><b>See Grade 6:</b><br><b>TB-B:</b> 89, 93 |
| <b>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.</b> |  |   |
| <b>3</b>   | Recognize volume as an attribute of solid figures and understand concepts of volume measurement.   |   |
| <b>a</b>   | A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.   | <b>TB-B:</b> 48<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 151–156<br><b>WB-B:</b> 173–179<br><b>See Grade 4:</b><br><b>TB-B:</b> 137<br><b>WB-B:</b> 150                                     |
| <b>b</b>   | A solid figure, which can be packed without gaps or overlaps using $n$ unit cubes, is said to have a volume of $n$ cubic units.  | <b>TB-B:</b> 49–53<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 155–156<br><b>WB-B:</b> 179<br><b>See Grade 4:</b><br><b>TB-B:</b> 137<br><b>WB-B:</b> 150                                      |
| <b>4</b>   | Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.  | <b>TB-B:</b> 48–49<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 137–138, 142<br><b>WB-B:</b> 150–151  |

| <b>Standards</b>   | <b>Descriptor</b>  | <b>Page Citations</b>   |
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| <b>5</b>   | Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.  |   |
| <b>a</b>   | Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.  | <b>TB-B:</b> 50–52<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 140–143<br><b>WB-B:</b> 151–152                         |
| <b>b</b>   | Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.  | <b>TB-B:</b> 51–52<br><b>WB-B:</b> 37<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 140–143, 145<br><b>WB-B:</b> 150–152 |
| <b>c</b>   | Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.   | <b>TB-B:</b> 49<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 137–139, 145<br><b>WB-B:</b> 150                           |
| <b>Geometry</b>  |  | <b>5.G</b>  |
| <b>Graph points on the coordinate plane to solve real-world and mathematical problems.</b> |  |   |
| <b>1</b>   | Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., $x$ -axis and $x$ -coordinate, $y$ -axis and $y$ -coordinate). | <b>TB-B:</b> 156–163<br><b>WB-B:</b> 151–154<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 93–96<br><b>WB-B:</b> 107–110 |
| <b>2</b>   | Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.  | <b>TB-B:</b> 128–130<br><b>WB-B:</b> 122<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 93–96<br><b>WB-B:</b> 107–110     |

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| <b>Classify two-dimensional figures into categories based on their properties.</b> |   |  |
| <b>3</b>   | Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. <i>For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</i> | <b>TB-B:</b> 95–98<br><br><b>See Grade 3:</b><br><b>TB-B:</b> 127–134<br><b>WB-B:</b> 146–152<br><b>See Grade 4:</b><br><b>TB-A:</b> 122–127<br><b>WB-A:</b> 140–143 |
| <b>4</b>   | Classify two-dimensional figures in a hierarchy based on properties.  | <b>See Grade 3:</b><br><b>TB-B:</b> 132–134<br><b>WB-B:</b> 146–152<br><b>See Grade 4:</b><br><b>TB-A:</b> 122–127<br><b>WB-A:</b> 140–143                           |

## Standards Edition, Primary Mathematics © 2008

correlated to the Common Core State Standards for Mathematics

\*Key: TB = Textbook, WB = Workbook

| Standards   | Descriptor   | Page Citations  |
|---|--|---|
| <b>Ratios and Proportional Relationships</b>                                |  | <b>6.RP</b>   |
| <b>Understand ratio concepts and use ratio reasoning to solve problems.</b> |  |   |
| <b>1</b>  | Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."</i>  | <b>TB-A:</b> 90–95<br><b>WB-A:</b> 75–76<br><br><b>See Grade 5:</b><br><b>TB-A:</b> 135–138<br><b>WB-A:</b> 129–138                 |
| <b>2</b>  | Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b$ not equal to 0, and use rate language in the context of a ratio relationship. <i>For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."</i> | <b>TB-A:</b> 90–95<br><b>WB-A:</b> 75–76  |
| <b>3</b>  | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.  |   |
| <b>a</b>  | Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.  | <b>TB-A:</b> 92–99<br><b>WB-A:</b> 22, 75–78<br><b>TB-B:</b> 185<br><br><b>See Grade 5:</b><br><b>TB-A:</b> 139–143, 159, 162–163   |
| <b>b</b>  | Solve unit rate problems including those involving unit pricing and constant speed. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i>  | <b>TB-A:</b> 124–143<br><b>WB-A:</b> 94–105, 109–110, 112   |
| <b>c</b>  | Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole, given a part and the percent.  | <b>TB-A:</b> 73–77, 121<br><b>WB-A:</b> 63–66, 89<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 61–63, 69–73<br><b>WB-B:</b> 51, 58–64 |
| <b>d</b>  | Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.  | <b>TB-A:</b> 96–99<br><b>WB-A:</b> 77–78  |

| Standards  | Descriptor   | Page Citations  |
|--|--|---|
| <b>The Number System</b>   |  | <b>6.NS</b>   |
| <b>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</b> |  |   |
| <b>1</b>   | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, create a story context for <math>(2/3) \div (3/4)</math> and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that <math>(2/3) \div (3/4) = 8/9</math> because <math>3/4</math> of <math>8/9</math> is <math>2/3</math>. (In general, <math>(a/b) \div (c/d) = ad/bc</math>.) How much chocolate will each person get if 3 people share <math>1/2</math> lb of chocolate equally? How many <math>3/4</math>-cup servings are in <math>2/3</math> of a cup of yogurt? How wide is a rectangular strip of land with length <math>3/4</math> mi and area <math>1/2</math> square mi?</i> | <b>TB-A:</b> 64–70<br><b>WB-A:</b> 54–55, 57–58, 62<br><br><b>See Grade 5:</b><br><b>TB-A:</b> 93, 96–97<br><b>WB-A:</b> 93, 95                                 |
| <b>Compute fluently with multi-digit numbers and find common factors and multiples.</b>                          |  |   |
| <b>2</b>   | Fluently divide multi-digit numbers using the standard algorithm.  | <b>See Grade 5:</b><br><b>TB-A:</b> 25–26, 44–48<br><b>WB-A:</b> 18, 37–40<br><b>TB-B:</b> 18–21, 27–30, 33–34, 38–40<br><b>WB-B:</b> 9–10, 16–18, 22–23, 27–29 |
| <b>3</b>   | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.   | <b>See Grade 5:</b><br><b>TB-B:</b> 16–41<br><b>WB-B:</b> 8–29  |
| <b>4</b>   | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. <i>For example, express <math>36 + 8</math> as <math>4(9 + 2)</math>.</i>  | <b>See Grade 5:</b><br><b>TB-A:</b> 17–18, 31–32<br><b>WB-A:</b> 12–13, 24  |

| <b>Standards</b>  | <b>Descriptor</b>  | <b>Page Citations</b>   |
|---|--|---|
| <b>Apply and extend previous understandings of numbers to the system of rational numbers.</b> |  |   |
| <b>5</b>  | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. | <b>TB-A:</b> 39–42<br><br><b>See Grade 4:</b><br><b>TB-A:</b> 42–47<br><b>WB-A:</b> 34–37<br><b>See Grade 5:</b><br><b>TB-B:</b> 149–151<br><b>WB-B:</b> 146–147                                    |
| <b>6</b>  | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.   |   |
| <b>a</b>  | Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$ , and that 0 is its own opposite.   | <b>TB-A:</b> 40–41<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 149–151<br><b>WB-B:</b> 146–147   |
| <b>b</b>  | Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.   | <b>TB-B:</b> 185–186<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 156–157<br><b>WB-B:</b> 151   |
| <b>c</b>  | Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.   | <b>TB-A:</b> 40–42<br><b>WB-A:</b> 21, 37–40<br><br><b>See Grade 4:</b><br><b>TB-A:</b> 42–44, 47<br><b>WB-A:</b> 34–35<br><b>See Grade 5:</b><br><b>TB-B:</b> 149–151, 156–157<br><b>WB-B:</b> 151 |
| <b>7</b>  | Understand ordering and absolute value of rational numbers.  |   |
| <b>a</b>  | Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret <math>-3 &gt; -7</math> as a statement that <math>-3</math> is located to the right of <math>-7</math> on a number line oriented from left to right.</i>   | <b>TB-A:</b> 39–46<br><b>WB-A:</b> 37–44<br><br><b>See Grade 4:</b><br><b>TB-A:</b> 42–45<br><b>WB-A:</b> 36<br><b>See Grade 5:</b><br><b>TB-B:</b> 149–151<br><b>WB-B:</b> 147                     |



| <b>Standards</b>  | <b>Descriptor</b>   | <b>Page Citations</b>  |
|---|---|--|
| <b>b</b>  | Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write <math>-3^{\circ}\text{C} &gt; -7^{\circ}\text{C}</math> to express the fact that <math>-3^{\circ}\text{C}</math> is warmer than <math>-7^{\circ}\text{C}</math>.</i>   | <b>TB-A:</b> 39, 43<br><b>WB-A:</b> 42<br><br><b>See Grade 4:</b><br><b>TB-A:</b> 42-43<br><b>WB-A:</b> 34-35<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 149-150<br><b>WB-B:</b> 146 |
| <b>c</b>  | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of <math>-30</math> dollars, write <math> -30  = 30</math> to describe the size of the debt in dollars.</i> | <b>TB-A:</b> 40-44<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 151<br><b>WB-B:</b> 147  |
| <b>d</b>  | Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than <math>-30</math> dollars represents a debt greater than 30 dollars.</i>  | <b>See Grade 4:</b><br><b>TB-A:</b> 42-43<br><b>WB-A:</b> 36-37<br><b>See Grade 5:</b><br><b>TB-B:</b> 149-151<br><b>WB-B:</b> 146   |
| <b>8</b>  | Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.   | <b>TB-A:</b> 26-30<br><b>WB-A:</b> 21-28<br><b>TB-B:</b> 185-192<br><b>WB-B:</b> 155-161<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 156-157<br><b>WB-B:</b> 151                      |
| <b>Expressions and Equations</b>  |   | <b>6.EE</b>  |
| <b>Apply and extend previous understandings of arithmetic to algebraic expressions.</b> |   |  |
| <b>1</b>  | Write and evaluate numerical expressions involving whole-number exponents.  | <b>TB-B:</b> 179-180<br><b>WB-B:</b> 151, 153-154<br><br><b>See Grade 5:</b><br><b>TB-A:</b> 21<br><b>WB-A:</b> 15   |
| <b>2</b>  | Write, read, and evaluate expressions in which letters stand for numbers.   |  |
| <b>a</b>  | Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation "Subtract <math>y</math> from 5" as <math>5 - y</math>.</i>  | <b>TB-A:</b> 10-13, 19-25<br><b>WB-A:</b> 5-10, 15-20<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 140-144<br><b>WB-B:</b> 139-140   |

| <b>Standards</b>   | <b>Descriptor</b>  | <b>Page Citations</b>   |
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| <b>b</b>   | Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. <i>For example, describe the expression <math>2(8 + 7)</math> as a product of two factors; view <math>(8 + 7)</math> as both a single entity and a sum of two terms.</i>   | <b>TB-A:</b> 8–11<br><br><b>See Grade 5:</b><br><b>TB-A:</b> 17–21, 29–33<br><b>TB-B:</b> 140–148                       |
| <b>c</b>   | Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <i>For example, use the formulas <math>V = s^3</math> and <math>A = 6s^2</math> to find the volume and surface area of a cube with sides of length <math>s = \frac{1}{2}</math>.</i> | <b>TB-A:</b> 19–25<br><b>WB-A:</b> 15–20, 61<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 140–148<br><b>WB-B:</b> 139–143 |
| <b>3</b>   | Apply the properties of operations to generate equivalent expressions. <i>For example, apply the distributive property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>; apply the distributive property to the expression <math>24x + 18y</math> to produce the equivalent expression <math>6(4x + 3y)</math>; apply properties of operations to <math>y + y + y</math> to produce the equivalent expression <math>3y</math>.</i>                                       | <b>See Grade 5:</b><br><b>TB-B:</b> 140–148<br><b>WB-B:</b> 144–145   |
| <b>4</b>   | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). <i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number regardless of which number <math>y</math> stands for.</i>   | <b>TB-A:</b> 8–11<br><br><b>See Grade 5:</b><br><b>TB-B:</b> 140–148  |
| <b>Reason about and solve one-variable equations and inequalities.</b> |  |   |
| <b>5</b>   | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.  | <b>TB-A:</b> 14–18<br><b>WB-A:</b> 11–14  |
| <b>6</b>   | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.   | <b>TB-A:</b> 10–13, 19–25<br><b>WB-A:</b> 5–10, 15–20, 90   |

| <b>Standards</b>   | <b>Descriptor</b>   | <b>Page Citations</b>   |
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| <b>7</b>   | Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which $p$ , $q$ and $x$ are all nonnegative rational numbers.   | <b>TB-A:</b> 14–18<br><b>WB-A:</b> 11–13  |
| <b>8</b>   | Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.   |   |
| <b>Represent and analyze quantitative relationships between dependent and independent variables.</b> |   |   |
| <b>9</b>   | Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation <math>d = 65t</math> to represent the relationship between distance and time.</i> | <b>TB-A:</b> 26<br><b>WB-A:</b> 22  |
| <b>Geometry</b>  |   | <b>6.G</b>  |
| <b>Solve real-world and mathematical problems involving area, surface area, and volume.</b>          |   |   |
| <b>1</b>   | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.   | <b>See Grade 5:</b><br><b>TB-A:</b> 108–126, 133–134, 149<br><b>WB-A:</b> 106–120, 125–127, 141<br><b>TB-B:</b> 43, 59–60, 104–105, 120, 137<br><b>WB-B:</b> 32, 45, 114, 137 |

| <b>Standards</b>   | <b>Descriptor</b>   | <b>Page Citations</b>  |
|--|---|--|
| <b>2</b>   | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. | <b>TB-B:</b> 29–33<br><b>WB-B:</b> 24–32<br><br><b>See Grade 4:</b><br><b>TB-B:</b> 140–146<br><b>WB-B:</b> 151–152<br><b>See Grade 5:</b><br><b>TB-B:</b> 50–53, 60, 121<br><b>WB-B:</b> 37 |
| <b>3</b>   | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.  | <b>See Grade 4:</b><br><b>TB-B:</b> 96<br><b>WB-B:</b> 109–110   |
| <b>4</b>   | Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.  | <b>See Grade 4:</b><br><b>TB-A:</b> 132–136<br><b>WB-A:</b> 148–155<br><b>See Grade 5:</b><br><b>TB-A:</b> 127–130<br><b>WB-A:</b> 121–122   |
| <b>Statistics and Probability</b>                        |   | <b>6.SP</b>  |
| <b>Develop understanding of statistical variability.</b> |   |  |
| <b>1</b>   | Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.</i>   | <b>TB-B:</b> 88–119<br><b>WB-B:</b> 92–116   |
| <b>2</b>   | Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  | <b>TB-B:</b> 88–119<br><b>WB-B:</b> 92–116   |
| <b>3</b>   | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.   | <b>TB-B:</b> 88–119<br><b>WB-B:</b> 92–116   |
| <b>Summarize and describe distributions.</b>             |   |  |
| <b>4</b>   | Display numerical data in plots on a number line, including dot plots, histograms, and box plots.   |  |
| <b>a</b>   | Reporting the number of observations.   | <b>TB-B:</b> 89, 90–91, 96–98, 103–104, 106–107, 110–116, 120–127<br><b>WB-B:</b> 105–108, 111–114, 116  |

| <b>Standards</b> | <b>Descriptor</b>   | <b>Page Citations</b>   |
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| <b>b</b>         | Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.   | <b>TB-B:</b> 88-119<br><b>WB-B:</b> 92-116  |
| <b>c</b>         | Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. | <b>TB-B:</b> 88-94, 97-99, 105, 107-110, 114-117<br><b>WB-B:</b> 92-95, 100, 103-108, 114-116 |
| <b>d</b>         | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.  | <b>TB-B:</b> 90-92, 109-113, 117  |