3rd Grade Curriculum 2019-2020
ELA Curriculum
Standards At-a-Glance

Grade 3

Kansas Standards for English Language Arts
Adopted November 2017
By the Kansas State Board of Education
(Adopted February 2018 by Olathe Public Schools Board of Education)
Grade 3

Click the strand name to view grade-level standards for a strand. Click the standard code for an expanded view of each standard.

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Grade 3
Writing

Text Types and Purposes
W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.
   a. Know the difference between fact and opinion.
   b. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.
   c. Provide reasons that support the opinion.
   d. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons.
   e. Provide a concluding statement or section.
W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
   a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.
   b. Develop the topic with facts, definitions, and details.
   c. Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.
   d. Provide a concluding statement or section.
W.3.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
   a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.
   b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.
   c. Use temporal words and phrases to signal event order.
   d. Provide a sense of closure.

Production and Distribution of Writing
W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.
W.3.5 With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising, and editing.
W.3.6 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.

Research to Build and Present Knowledge
W.3.7 Conduct short research projects that build knowledge about a topic.
W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
W.3.9 (Begin in grade 4)

Language in Writing
W.3.10 Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when writing.
   W.3.10.a Choose words and phrases for effect.
   W.3.10.b Experiment with nouns, pronouns, verbs, adjectives, and adverbs when writing, making note of how each functions to create meaning.
   W.3.10.c Form and use regular and irregular plural nouns, abstract nouns, and regular and irregular verbs.
   W.3.10.d Form and use the simple verb tenses (e.g., I walked, I walk, I will walk).
   W.3.10.e Ensure subject-verb and pronoun-antecedent agreement when writing.
   W.3.10.f Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.
   W.3.10.g Use coordinating and subordinating conjunctions.
   W.3.10.h Produce simple, compound, and complex sentences.
W.3.11 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
   W.3.11.a Capitalize appropriate words in titles.
   W.3.11.b Use commas in addresses.
   W.3.11.c Use commas and quotation marks in dialogue.
   W.3.11.d Form and use possessives.
   W.3.11.e Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., sitting, smiled, cries, happiness).
   W.3.11.f Use spelling patterns and generalizations when writing words.
   W.3.11.g Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.

Range of Writing
W.3.12 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.
Grade 3
Speaking and Listening

Comprehension and Collaboration
SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.
   SL.3.1.a 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.
   SL.3.1.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).
   SL.3.1.c Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
   SL.3.1.d Explain their ideas and understanding in light of the discussion.
SL.3.2 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.
SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Presentation of Knowledge and Ideas
SL.3.4 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.
SL.3.5 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.
SL.3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Language in Speaking and Listening
SL.3.7 Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when speaking.
   SL.3.7.a Choose words and phrases for effect.
   SL.3.7.b Experiment with nouns, pronouns, verbs, adjectives, and adverbs when writing, making note of how each functions to create meaning.
   SL.3.7.c Form and use regular and irregular plural nouns, abstract nouns, and regular and irregular verbs.
   SL.3.7.d Form and use the simple verb tenses (e.g., I walked, I walk, I will walk).
   SL.3.7.e Ensure subject-verb and pronoun-antecedent agreement when speaking.
   SL.3.7.f Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.
   SL.3.7.g Use coordinating and subordinating conjunctions.
   SL.3.7.h Produce simple, compound, and complex sentences.
SL.3.8 Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships.
Grade 3
Reading: Foundational

Print Concepts
RF.3.1 Not applicable to Grade 3

Phonological Awareness
RF.3.2 Not applicable to Grade 3

Phonics and Word Recognition
RF.3.3 Know and apply grade-level phonics and word analysis skills in decoding words.
   - RF.3.3.a Identify and know the meaning of the most common prefixes and derivational suffixes (e.g., infield, wonderful).
   - RF.3.3.b Decode words with common Latin suffixes (e.g., -able, -ation, -ible).
   - RF.3.3.c Decode multisyllabic words.
   - RF.3.3.d Read grade-appropriate irregularly spelled words.

Fluency
RF.3.4 Read with sufficient accuracy and fluency to support comprehension.
   - RF.3.4.a Read on-level text with purpose and understanding.
   - RF.3.4.b Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.
   - RF.3.4.c Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
Grade 3
Reading: Literature

Key Ideas and Details
RL.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RL.3.2 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.
RL.3.3 Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.

Craft and Structure
RL.3.4 Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.
RL.3.5 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.
RL.3.6 Distinguish their own point of view from that of the narrator or those of the characters.

Integration of Knowledge and Ideas
RL.3.7 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 character or setting).
RL.3.8 (Not applicable for literature)
RL.3.9 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).

Language in Reading: Literature
RL.3.10 Use knowledge of language and its conventions when reading.
RL.3.10.a Recognize and observe differences between the conventions of spoken and written standard English.
RL.3.11 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies.
RL.3.11.a Use sentence-level context as a clue to the meaning of a word or phrase.
RL.3.11.b Determine the meaning of the new word formed when a known affix is added to a known word.
RL.3.11.c Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).
RL.3.11.d Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.
RL.3.12 Demonstrate understanding of word relationships and nuances in word meanings.
RL.3.12.a Distinguish the literal and figurative meanings of words and phrases in context.
RL.3.12.b Identify real-life connections between words and their uses.
RL.3.12.c Distinguish shades of meaning among related words that describe states of mind or degrees of certainty.

Range of Reading and Level of Text
RL.3.13 Read and comprehend high quality prose and poetry of appropriate quantitative and qualitative complexity for Grade 3.
Grade 3
Reading: Informational

Key Ideas and Details
RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
RI.3.3 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.

Craft and Structure
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.
RI.3.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
RI.3.6 Distinguish their own point of view from that of the author of a text.

Integration of Knowledge and Ideas
RI.3.7 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).
RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).
RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic.

Language in Reading: Informational
RI.3.10 Use knowledge of language and its conventions when reading.
RI.3.10.a Recognize and observe differences between the conventions of spoken and written standard English.
RI.3.11 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies.
RI.3.11.a Use sentence-level context as a clue to the meaning of a word or phrase.
RI.3.11.b Determine the meaning of the new word formed when a known affix is added to a known word.
RI.3.11.c Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).
RI.3.11.d Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.
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RI.3.12.b Identify real-life connections between words and their uses.
RI.3.12.c Distinguish shades of meaning among related words that describe states of mind or degrees of certainty.

Range of Reading and Level of Text
RI.3.13 Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for Grade 3.
Grade 3

Kansas Standards for English Language Arts

Adopted November 2017
By the Kansas State Board of Education

(Adopted February 2018 by Olathe Public Schools Board of Education)
The 2017 English Language Arts Standards were created with a goal to meet the vision of the Kansas State Board of Education: To Lead the World in the Success of Each Student. To this end, these standards were built with the purpose of providing educators, parents, and other education stakeholders a clear view of what English Language Arts and Literacy instruction should look like in Kansas.

Further, the English Language Arts Standards are built upon a foundation of common understandings – or practices – which provide a “big picture view” of broad goals for English Language Arts and Literacy instruction for each student across the state. These five foundational practices are intended to support a philosophy aligned with the Kansas State Board of Education’s vision and goals, which are intended to ensure that, through their PreK-12 experiences, Kansas kids are equipped with the academic, cognitive, metacognitive, technical, and employability skills required for postsecondary success, as well as the capacity to positively impact the world around them.

**English Language Arts Foundational Practices**

1. Write, speak, read, and listen appropriately in all disciplines.
2. Seek out and work to understand diverse perspectives.
3. Use knowledge gained from literacy experiences to solve problems.
4. Create multimodal versions of texts for a range of purposes and audiences.
5. Self-regulate and monitor growth in writing, speaking, reading, and listening.
## Grade 3

*Click the strand name to view grade-level standards for a strand. Click the standard code for an expanded view of each standard.*

### Writing
- **Text Types and Purposes**: W.3.1, W.3.2, W.3.3
- **Production and Distribution of Writing**: W.3.4, W.3.5, W.3.6
- **Research to Build and Present Knowledge**: W.3.7, W.3.8, W.3.9
- **Language in Writing**: W.3.10, W.3.11
- **Range of Writing**: W.3.12

### Speaking and Listening
- **Comprehension and Collaboration**: SL.3.1, SL.3.2, SL.3.3
- **Presentation of Knowledge and Ideas**: SL.3.4, SL.3.5, SL.3.6
- **Language in Speaking and Listening**: SL.3.7, SL.3.8

### Reading: Foundational
- **Print Concepts**: RF.3.1
- **Phonological Awareness**: RF.3.2
- **Phonics and Word Recognition**: RF.3.3
- **Fluency**: RF.3.4

### Reading: Literature
- **Key Ideas and Details**: RL.3.1, RL.3.2, RL.3.3
- **Craft and Structure**: RL.3.4, RL.3.5, RL.3.6
- **Integration of Knowledge and Ideas**: RL.3.7, RL.3.8, RL.3.9
- **Language in Reading: Literature**: RL.3.10, RL.3.11, RL.3.12
- **Range of Reading and Level of Text**: RL.3.13

### Reading: Informational
- **Key Ideas and Details**: RI.3.1, RI.3.2, RI.3.3
- **Craft and Structure**: RI.3.4, RI.3.5, RI.3.6
- **Integration of Knowledge and Ideas**: RI.3.7, RI.3.8, RI.3.9
- **Language in Reading: Informational**: RI.3.10, RI.3.11, RI.3.12
- **Range of Reading and Level of Text**: RI.3.13
Grade 3
Writing

Text Types and Purposes
W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.
   a. Know the difference between fact and opinion
   b. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons
   c. Provide reasons that support the opinion
   d. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons
   e. Provide a concluding statement or section
W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
   a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.
   b. Develop the topic with facts, definitions, and details.
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W.3.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
   a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.
   b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.
   c. Use temporal words and phrases to signal event order.
   d. Provide a sense of closure

Production and Distribution of Writing
W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.
W.3.5 With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising, and editing.
W.3.6 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.

Research to Build and Present Knowledge
W.3.7 Conduct short research projects that build knowledge about a topic.
W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
W.3.9 (Begins in grade 4)

Language in Writing
W.3.10 Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when writing.
   W.3.10.a Choose words and phrases for effect.
   W.3.10.b Experiment with nouns, pronouns, verbs, adjectives, and adverbs when writing, making note of how each functions to create meaning.
   W.3.10.c Form and use regular and irregular plural nouns, abstract nouns, and regular and irregular verbs.
   W.3.10.d Form and use the simple verb tenses (e.g., I walked, I walk, I will walk).
   W.3.10.e Ensure subject-verb and pronoun-antecedent agreement when writing.
   W.3.10.f Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.
   W.3.10.g Use coordinating and subordinating conjunctions.
   W.3.10.h Produce simple, compound, and complex sentences.
W.3.11 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
   W.3.11.a Capitalize appropriate words in titles.
   W.3.11.b Use commas in addresses.
   W.3.11.c Use commas and quotation marks in dialogue.
   W.3.11.d Form and use possessives.
   W.3.11.e Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., sitting, smiled, cries, happiness).
   W.3.11.f Use spelling patterns and generalizations when writing words.
   W.3.11.g Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.

Range of Writing
W.3.12 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.

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Grade 3
Speaking and Listening

Comprehension and Collaboration
SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.
  SL.3.1.a 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.
  SL.3.1.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).
  SL.3.1.c Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
  SL.3.1.d Explain their ideas and understanding in light of the discussion.
SL.3.2 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.
SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Presentation of Knowledge and Ideas
SL.3.4 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.
SL.3.5 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.
SL.3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Language in Speaking and Listening
SL.3.7 Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when speaking.
  SL.3.7.a Choose words and phrases for effect.
  SL.3.7.b Experiment with nouns, pronouns, verbs, adjectives, and adverbs when writing, making note of how each functions to create meaning.
  SL.3.7.c Form and use regular and irregular plural nouns, abstract nouns, and regular and irregular verbs.
  SL.3.7.d Form and use the simple verb tenses (e.g., I walked, I walk, I will walk).
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  SL.3.7.g Use coordinating and subordinating conjunctions.
  SL.3.7.h Produce simple, compound, and complex sentences.
SL.3.8 Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships.
Grade 3
Reading: Foundational

Print Concepts
RF.3.1 Not applicable to Grade 3

Phonological Awareness
RF.3.2 Not applicable to Grade 3

Phonics and Word Recognition
RF.3.3 Know and apply grade-level phonics and word analysis skills in decoding words.
   RF.3.3.a Identify and know the meaning of the most common prefixes and derivational suffixes (e.g., infield, wonderful).
   RF.3.3.b Decode words with common Latin suffixes (e.g., -able, -ation, -ible).
   RF.3.3.c Decode multisyllabic words.
   RF.3.3.d Read grade-appropriate irregularly spelled words.

Fluency
RF.3.4 Read with sufficient accuracy and fluency to support comprehension.
   RF.3.4.a Read on-level text with purpose and understanding.
   RF.3.4.b Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.
   RF.3.4.c Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
Grade 3
Reading: Literature

Key Ideas and Details
RL.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RL.3.2 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.
RL.3.3 Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.

Craft and Structure
RL.3.4 Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.
RL.3.5 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.
RL.3.6 Distinguish their own point of view from that of the narrator or those of the characters.

Integration of Knowledge and Ideas
RL.3.7 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 character or setting).
RL.3.8 (Not applicable for literature)
RL.3.9 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).

Language in Reading: Literature
RL.3.10 Use knowledge of language and its conventions when reading.
RL.3.10.a Recognize and observe differences between the conventions of spoken and written standard English.
RL.3.11 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies.
RL.3.11.a Use sentence-level context as a clue to the meaning of a word or phrase.
RL.3.11.b Determine the meaning of the new word formed when a known affix is added to a known word.
RL.3.11.c Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).
RL.3.11.d Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.
RL.3.12 Demonstrate understanding of word relationships and nuances in word meanings.
RL.3.12.a Distinguish the literal and figurative meanings of words and phrases in context.
RL.3.12.b Identify real-life connections between words and their uses.
RL.3.12.c Distinguish shades of meaning among related words that describe states of mind or degrees of certainty.

Range of Reading and Level of Text
RL.3.13 Read and comprehend high quality prose and poetry of appropriate quantitative and qualitative complexity for Grade 3.
Grade 3
Reading: Informational

Key Ideas and Details
RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
RI.3.3 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.

Craft and Structure
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.
RI.3.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
RI.3.6 Distinguish their own point of view from that of the author of a text.

Integration of Knowledge and Ideas
RI.3.7 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).
RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).
RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic.

Language in Reading: Informational
RI.3.10 Use knowledge of language and its conventions when reading.
RI.3.10.a Recognize and observe differences between the conventions of spoken and written standard English.
RI.3.11 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies.
RI.3.11.a Use sentence-level context as a clue to the meaning of a word or phrase.
RI.3.11.b Determine the meaning of the new word formed when a known affix is added to a known word.
RI.3.11.c Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).
RI.3.11.d Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.
RI.3.12 Demonstrate understanding of word relationships and nuances in word meanings.
RI.3.12.a Distinguish the literal and figurative meanings of words and phrases in context.
RI.3.12.b Identify real-life connections between words and their uses.
RI.3.12.c Distinguish shades of meaning among related words that describe states of mind or degrees of certainty.

Range of Reading and Level of Text
RI.3.13 Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for Grade 3.
## Grade 3 Writing

<table>
<thead>
<tr>
<th>W.3.1</th>
<th>Write opinion pieces on topics or texts, supporting a point of view with reasons.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Know the difference between fact and opinion</td>
</tr>
<tr>
<td>b.</td>
<td>Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons</td>
</tr>
<tr>
<td>c.</td>
<td>Provide reasons that support the opinion</td>
</tr>
<tr>
<td>d.</td>
<td>Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons</td>
</tr>
<tr>
<td>e.</td>
<td>Provide a concluding statement or section</td>
</tr>
</tbody>
</table>

To address this standard, students **could:**
- Sort information about a topic by fact or opinion.
- Write a persuasive paragraph about a topic.
- Create an ad to convince a potential consumer to purchase their product.

### Kansas High School Graduates Can:

- Use valid reasoning and relevant and sufficient evidence to support a written argument.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>W.2.1</th>
<th>W.3.1</th>
<th>W.4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply multiple reasons for the opinion, and provide some sense of closure.</td>
<td>Write opinion pieces on topics or texts, supporting a point of view with reasons.</td>
<td>Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</td>
</tr>
<tr>
<td>1</td>
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<td>11-12</td>
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</tbody>
</table>

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# Grade 3
## Writing

<table>
<thead>
<tr>
<th><strong>W.3.2</strong></th>
<th>Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.</td>
</tr>
<tr>
<td></td>
<td>b. Develop the topic with facts, definitions, and details.</td>
</tr>
<tr>
<td></td>
<td>c. Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.</td>
</tr>
<tr>
<td></td>
<td>d. Provide a concluding statement or section.</td>
</tr>
</tbody>
</table>

### To address this standard, students could:
- Create a research presentation to inform their peers about a topic.
- Write an article to share information with their peers.
- Develop a digital presentation to include multimedia components to share with their peers.

### Kansas High School Graduates Can:
Create coherent, well-organized explanatory texts to convey complex ideas about a variety of topics.

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>W.2.2</th>
<th>W.3.2</th>
<th>W.4.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.</td>
<td>Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</td>
<td>Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</td>
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<tr>
<td>Grade 3 Writing</td>
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<tr>
<td><strong>W.3.3</strong> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</td>
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</tr>
<tr>
<td>a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.</td>
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</tr>
<tr>
<td>b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.</td>
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</tr>
<tr>
<td>c. Use temporal words and phrases to signal event order.</td>
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<td></td>
</tr>
<tr>
<td>d. Provide a sense of closure.</td>
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</tbody>
</table>

**To address this standard, students could:**
- Create and complete an interview of a character in a book.
- Create an alternate ending to a story.

**Kansas High School Graduates Can:**
Create coherent, well-sequenced real or imagined narrative texts with developed plots, characters, and dialogue.

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9-10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</td>
<td>Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</td>
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</tbody>
</table>
## Grade 3
### Writing

<table>
<thead>
<tr>
<th></th>
<th>W.3.4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><em>With guidance and support from adults,</em> produce writing in which the development and organization are appropriate to task and purpose.</td>
<td></td>
</tr>
</tbody>
</table>

### To address this standard, students *could*:
- Produce a coherent, organized piece of writing.

### Kansas High School Graduates Can:
Create texts appropriate for specific purposes, audiences, and tasks.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th></th>
<th>W.2.4</th>
<th>W.3.4</th>
<th>W.4.4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Begins in grade 3)</td>
<td><em>With guidance and support from adults,</em> produce writing in which the development and organization are appropriate to task and purpose.</td>
<td>Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.</td>
</tr>
</tbody>
</table>
# Grade 3 Writing

<table>
<thead>
<tr>
<th>W.3.5</th>
<th>With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising, and editing.</th>
</tr>
</thead>
</table>

To address this standard, students *could*:  
- Plan a writing piece with a focused topic.  
- Revise to strengthen writing piece.  
- Edit to strengthen writing piece.

**Kansas High School Graduates Can:**  
Employ a recursive writing process – including planning, drafting, editing, and revising – to refine and improve their writing.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>W.2.5</th>
<th>W.3.5</th>
<th>W.4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.</strong></td>
<td><strong>With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising, and editing.</strong></td>
<td><strong>With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising, and editing.</strong></td>
<td></td>
</tr>
</tbody>
</table>

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## Grade 3 Writing

<table>
<thead>
<tr>
<th>W.3.6</th>
<th>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.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**

- Use digital tools to publish writing.
- Produce a final copy.
- Work collaboratively with peers.
- Develop keyboarding skills.

**Kansas High School Graduates Can:**

Effectively use a variety of digital tools to produce original works both independently and collaboratively.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th></th>
<th>W.2.6</th>
<th>W.3.6</th>
<th>W.4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Progression of Standard Across Grades</strong></td>
<td>With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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## Grade 3 Writing

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W.3.7</td>
<td>Conduct short research projects that build knowledge about a topic.</td>
</tr>
</tbody>
</table>

### To address this standard, students could:

- Ask questions to support the inquiry process.
- Select a topic of personal interest and compose questions about that topic to guide inquiry.
- Utilize digital tools to find answers to research questions, and to present findings to peers and adults.

### Kansas High School Graduates Can:

Engage in an inquiry process to build an understanding of a range of topics, and create meaningful work based on their learning.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>W.2.7</th>
<th>W.3.7</th>
<th>W.4.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-12</td>
<td>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).</td>
<td>Conduct short research projects that build knowledge about a topic.</td>
<td>Conduct short research projects that build knowledge through investigation of different aspects of a topic.</td>
</tr>
</tbody>
</table>
### Grade 3 Writing

<table>
<thead>
<tr>
<th>W.3.8</th>
<th>Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To address this standard, students could:</strong></td>
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<tr>
<td>• Participate in a sorting activity in which they sort several pieces of information into categories relevant to the topic or writing purpose. (e.g., Sort informational paragraphs about honeybees into these groups, depending on content of the paragraphs: habitat, life cycle, roles and jobs in the hive, etc.)</td>
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<tr>
<td><strong>Kansas High School Graduates Can:</strong></td>
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<tr>
<td>Locate information from a variety of sources, evaluate the credibility and accuracy of sources, and use information from multiple sources to create original texts.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Progression of Standard Across Grades</strong></th>
<th>W.2.8</th>
<th>W.3.8</th>
<th>W.4.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall information from experiences or gather information from provided sources to answer a question.</td>
<td>Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
## Grade 3 Writing

**W.3.9**  
(Begins in grade 4)

**To address this standard, students *could*:**

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Locate and use supportive and relevant evidence from a range of text types to strengthen original works.</th>
</tr>
</thead>
</table>

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>W.2.9</th>
<th>W.3.9</th>
<th>W.4.9</th>
</tr>
</thead>
</table>
| (Begins in grade 4) | (Begins in grade 4) | **Draw evidence from literary or informational texts to support analysis, reflection, and research.**  
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]”).  
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”). |
### Grade 3  
**Writing**

| **W.3.10** | Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when writing.  
| | a. Choose words and phrases for effect.  
| | b. Experiment with nouns, pronouns, verbs, adjectives, and adverbs when writing, making note of how each functions to create meaning.  
| | c. Form and use regular and irregular plural nouns, abstract nouns, and regular and irregular verbs.  
| | d. Form and use the simple verb tenses (e.g., I walked, I walk, I will walk).  
| | e. Ensure subject-verb and pronoun-antecedent agreement when writing.  
| | f. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.  
| | g. Use coordinating and subordinating conjunctions.  
| | h. Produce simple, compound, and complex sentences. |

**To address this standard, students could:**

- Engage in a writing process that allows them to review and use models to determine how to make their writing more effective.
- Look closely at the use of subjects and verbs in their own writing to determine whether they agree, and revise their work accordingly.

**Kansas High School Graduates Can:** Accurately and effectively use standard English grammar and usage when writing.

### Progression of Standard Across Grades

| **W.2.10** | Demonstrate command of the conventions of standard English grammar and usage when writing. (Click link above for details.) |
| **W.3.10** | Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when writing. (See details above.) |
| **W.4.10** | Demonstrate command of the conventions of standard English grammar and usage when writing. (Click link above for details.) |
Grade 3
Writing

| W.3.11 | Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.  
|        | a. Capitalize appropriate words in titles.  
|        | b. Use commas in addresses.  
|        | c. Use commas and quotation marks in dialogue.  
|        | d. Form and use possessives.  
|        | e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., sitting, smiled, cries, happiness).  
|        | f. Use spelling patterns and generalizations when writing words.  
|        | g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.  |

To address this standard, students could:

- Engage in a free writing activity, and then practice reviewing work to check and correct spelling, if necessary.
- Write a letter to the principal about a school-related topic, and attend to appropriate uses of capital letters and commas.

Kansas High School Graduates Can: Accurately and effectively use the mechanics of standard English for the purpose of productive communication.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>W.2.11</th>
<th>W.3.11</th>
<th>W.4.11</th>
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</thead>
<tbody>
<tr>
<td>Demonstrate command</td>
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<td>of the conventions of standard</td>
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<tr>
<td>English capitalization,</td>
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<tr>
<td>punctuation, and spelling when</td>
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<td>writing. (Click link above for</td>
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<tr>
<td>writing. (See details above.)</td>
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<td>details.)</td>
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</table>
## Grade 3
### Writing

| W.3.12 | 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. |

**To address this standard, students **could:**
- Write daily for different purposes and audiences.
- Use writing to communicate thoughts, questions, and answers.

| Kansas High School Graduates Can: | Write routinely over varied time frames for a range of tasks, purposes, and audiences. |

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>W.2.12</th>
<th>W.3.10</th>
<th>W.4.12</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Begins in grade 3)</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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# Grade 3
## Speaking and Listening

| SL.3.1 | Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse on *Grade 3 topics and texts*, building on others’ ideas and expressing their own clearly.  
| a. 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.  
| 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).  
| c. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.  
| d. Explain their ideas and understanding in light of the discussion. |

To address this standard, students *could*:
- Participate in group discussions focused on a common text.
- Participate in group discussions focused on a topic presented in class.

### Kansas High School Graduates Can:
Engage in civil discourse, and express original ideas professionally, clearly, and persuasively in a variety of settings and with diverse partners who both agree and disagree with their point of view.

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>SL.2.1</th>
<th>SL.3.1</th>
<th>SL.4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in collaborative conversations about <em>Grade 2 topics and texts</em> with peers and adults in small and larger groups.</td>
<td>Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse on <em>Grade 3 topics and texts</em>, building on others’ ideas and expressing their own clearly.</td>
<td>Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <em>Grade 4 topics and texts</em>, building on others’ ideas and expressing their own clearly.</td>
</tr>
</tbody>
</table>

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Grade 3  
Speaking and Listening

| SL.3.2 | 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. |

**To address this standard, students could:**
- Know the definition of a key detail and identify key details.
- Know the definition of a main idea and identify main ideas.
- Synthesize information presented orally and/or in diverse formats.

**Kansas High School Graduates Can:** Synthesize information presented in diverse media and formats, assessing its relevance and accuracy according to purpose and audience.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>SL.2.2</th>
<th>SL.3.2</th>
<th>SL.4.2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</td>
<td>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.</td>
<td>Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.</td>
</tr>
</tbody>
</table>
## Grade 3
### Speaking and Listening

<table>
<thead>
<tr>
<th>SL.3.3</th>
<th>Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To address this standard, students could:</strong></td>
<td></td>
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<tr>
<td>- Ask and answer questions about information presented orally.</td>
<td></td>
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<tr>
<td>- Distinguish between a question and a statement.</td>
<td></td>
</tr>
<tr>
<td>- Construct relevant statements and questions.</td>
<td></td>
</tr>
<tr>
<td>- Provide elaboration and detail when answering questions about information from a speaker.</td>
<td></td>
</tr>
<tr>
<td><strong>Kansas High School Graduates Can:</strong></td>
<td>Objectively assess the relevance, accuracy, and validity of a speaker’s claim and supporting evidence.</td>
</tr>
</tbody>
</table>

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>SL.2.3</th>
<th>SL.3.3</th>
<th>SL.4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>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.</strong></td>
<td><strong>Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.</strong></td>
<td><strong>Identify the reasons and evidence a speaker provides to support particular points.</strong></td>
</tr>
</tbody>
</table>

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# Grade 3
## Speaking and Listening

<table>
<thead>
<tr>
<th>SL.3.4</th>
<th>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.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**
- Identify words that appeal to the senses.
- Use words that suggest feelings.
- Use appropriate volume, enunciation, and rate when speaking for a variety of purposes.
- Speech is logical and understandable.
- Focus on details that relate directly to the topic or text.

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Prepare a variety of presentations, each with a clear line of reasoning, meaningful organization, appropriate style, including information, findings, and supporting evidence suitable to a specific purpose and audience.</th>
</tr>
</thead>
</table>

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>SL.2.4</th>
<th>SL.3.4</th>
<th>SL.4.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>
Grade 3
Speaking and Listening

<table>
<thead>
<tr>
<th>SL.3.5</th>
<th>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.</th>
</tr>
</thead>
</table>

To address this standard, students could:
- Produce physical or digital drawings depicting information described with detail.
- Create visual displays to emphasize facts or details.
- Use technology to create audio recordings.
- Create Audio recordings demonstrating reading fluently with appropriate pacing.
- Recount experiences.

Kansas High School Graduates Can:
Strategically incorporate appropriate digital and graphic elements into presentations to express information and enhance an audience’s understanding.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>SL.2.5</th>
<th>SL.3.5</th>
<th>SL.4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
<td>Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.</td>
<td></td>
</tr>
</tbody>
</table>
# Grade 3
## Speaking and Listening

<table>
<thead>
<tr>
<th>SL.3.6</th>
<th>Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**

- Speak with appropriate volume, enunciation, and rate.
- Use complete sentences when speaking including a subject and a predicate.

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Effectively adapt speech to fit a variety of contexts and communication situations.</th>
</tr>
</thead>
</table>

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>SL.2.6</th>
<th>SL.3.6</th>
<th>SL.4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</td>
<td>Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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Grade 3  
**Speaking and Listening**

<table>
<thead>
<tr>
<th>SL.3.7</th>
<th>Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when speaking.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Choose words and phrases for effect.</td>
</tr>
<tr>
<td></td>
<td>b. Experiment with nouns, pronouns, verbs, adjectives, and adverbs when writing, making note of how each functions to create meaning.</td>
</tr>
<tr>
<td></td>
<td>c. Form and use regular and irregular plural nouns, abstract nouns, and regular and irregular verbs.</td>
</tr>
<tr>
<td></td>
<td>d. Form and use the simple verb tenses (e.g., I walked, I walk, I will walk).</td>
</tr>
<tr>
<td></td>
<td>e. Ensure subject-verb and pronoun-antecedent agreement when speaking.</td>
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<tr>
<td></td>
<td>f. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.</td>
</tr>
<tr>
<td></td>
<td>g. Use coordinating and subordinating conjunctions.</td>
</tr>
<tr>
<td></td>
<td>h. Produce simple, compound, and complex sentences.</td>
</tr>
</tbody>
</table>

To address this standard, students could:

- Role play conversations with peers in which they are given different situations and practice choosing words that would most effectively produce a desired result.
- Collaborate with peers to prepare a presentation for an audience in which they attempt to convince an audience to make a certain decision about an important issue.

**Kansas High School Graduates Can:** Accurately and effectively use standard English grammar and usage when speaking.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>SL.2.7</th>
<th>SL.3.7</th>
<th>SL.4.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate command of the conventions of standard English grammar and usage when speaking. (Click link above for details.)</td>
<td>Demonstrate knowledge of language and command of the conventions of standard English grammar and usage when speaking. (See details above.)</td>
<td>Demonstrate command of the conventions of standard English grammar and usage when speaking. (Click link above for details.)</td>
<td></td>
</tr>
</tbody>
</table>
# Grade 3
## Speaking and Listening

<table>
<thead>
<tr>
<th>SL.3.8</th>
<th>Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships.</th>
</tr>
</thead>
</table>

**To address this standard, students *could*:**

- Practice conversations related to a specific text in which they must use domain-specific language in order to convey meaning.
- Describe to a group of peers his or her “perfect day,” including where it would take place, when each activity would happen, etc.

**Kansas High School Graduates Can:** Use a variety of context-appropriate words in a range of situations, and engage in effective strategies for determining word meanings and adding new words to a personal vocabulary bank.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>SL.2.8</th>
<th>SL.3.8</th>
<th>SL.4.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe.</td>
<td>Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships.</td>
<td>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 and that are basic to a particular topic.</td>
</tr>
</tbody>
</table>
### Grade 3
Reading: Foundational
Print Concepts

<table>
<thead>
<tr>
<th>RF.3.1</th>
<th>Not applicable to grade 3.</th>
</tr>
</thead>
</table>

To address this standard, students *could*:

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>K</th>
<th>1</th>
<th>2</th>
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<th>9-10</th>
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</tbody>
</table>
# Grade 3

## Reading: Foundational

### Phonological Awareness

<table>
<thead>
<tr>
<th>RF.3.2</th>
<th>Not applicable to grade 3.</th>
</tr>
</thead>
</table>

**To address this standard, students *could*:**

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th></th>
<th>K</th>
<th>1</th>
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</tbody>
</table>
# Grade 3
## Reading: Foundational

### Phonics and Word Recognition

<table>
<thead>
<tr>
<th>RF.3.3</th>
<th>Know and apply grade-level phonics and word analysis skills in decoding words.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Identify and know the meaning of the most common prefixes and derivational suffixes (e.g., infield, wonderful).</td>
</tr>
<tr>
<td></td>
<td>b. Decode words with common Latin suffixes (e.g., -able, -ation, -ible).</td>
</tr>
<tr>
<td></td>
<td>c. Decode multisyllabic words.</td>
</tr>
<tr>
<td></td>
<td>d. Read grade-appropriate irregularly spelled words.</td>
</tr>
</tbody>
</table>

**To address this standard, students could:**
- Select words in a text that have common prefixes and suffixes, and discuss the meanings of those words with peers or adults.
- Read – silently or aloud – books with multisyllabic words, and check understanding of the text with peers or adults.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RF.2.3</th>
<th>RF.3.3</th>
<th>RF.4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know and apply grade-level phonics and word analysis skills in decoding words. (Click link above for details.)</td>
<td>Know and apply grade-level phonics and word analysis skills in decoding words. (See details above.)</td>
<td>Know and apply grade-level phonics and word analysis skills in decoding words. (Click link above for details.)</td>
<td></td>
</tr>
</tbody>
</table>
Grade 3
Reading: Foundational

Fluency

| RF.3.4 | Read with sufficient accuracy and fluency to support comprehension.  
| a. Read on-level text with purpose and understanding.  
| b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.  
| c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary. |

To address this standard, students could:
- Participate in practicing and then performing a poem for a peer, several peers, or adults.  
- Find – in a classroom, school, or public library – a text that will help him or her learn more about a topic of personal interest.

Progression of Standard Across Grades

| RF.2.4 | Read with sufficient accuracy and fluency to support comprehension. |
| RF.3.4 | Read with sufficient accuracy and fluency to support comprehension. |
| RF.4.4 | Read with sufficient accuracy and fluency to support comprehension. |
# Grade 3
## Reading: Literature

<table>
<thead>
<tr>
<th>Grade</th>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>RL.3.1</td>
<td>Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
</tr>
</tbody>
</table>

**To address this standard, students could:**
- Construct questions about a text using *who, what, where, when, why,* and *how.*
- Use text and text features to ask and answer key idea/detail questions.
- Identify the location of the answer in the text (by giving a page number, pointing to the answer, etc.).

**Kansas High School Graduates Can:**
Read closely through multiple interactions with a text in order to determine what the text says explicitly and to make logical inferences; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>RL.2.1</th>
<th>RL.3.1</th>
<th>RL.4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-2</td>
<td>Ask and answer such questions as <em>who, what, where, when, why,</em> and <em>how</em> to demonstrate understanding of key details in a text.</td>
<td>Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
<td>Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</td>
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<tr>
<td>3</td>
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</tbody>
</table>

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### Grade 3
**Reading: Literature**

| RL.3.2 | 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. |

**To address this standard, students could:**
- Recount stories by giving detailed events in chronological order.
- Use background knowledge and the text to determine what the author wants the reader to learn.

| Kansas High School Graduates Can: | Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. |

| RL.2.2 | Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral. | RL.3.2 | 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. | RL.4.2 | Determine the theme of a story, drama, or poem from details in the text; summarize the text. |

**Progression of Standard Across Grades**

| K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9-10 | 11-12 |

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## Grade 3
### Reading: Literature

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RL.3.3</strong></td>
<td>Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.</td>
<td>Use a visual display to explain how one character’s actions contributed to an event or a sequence of events in a story. Create a character map showing important, text-supported features of a character.</td>
</tr>
</tbody>
</table>

### Kansas High School Graduates Can:
Analyze elements of plot as they relate to the meaning of a text.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>RL.2.3</th>
<th>RL.3.3</th>
<th>RL.4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Describe how characters in a story respond to major events and challenges.</td>
<td>Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.</td>
<td>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).</td>
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<td>1-2</td>
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### Grade 3
**Reading: Literature**

<table>
<thead>
<tr>
<th>RL.3.4</th>
<th>Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To address this standard, students could:</strong></td>
<td></td>
</tr>
<tr>
<td>● Describe how word choice affects the meaning of a text.</td>
<td></td>
</tr>
<tr>
<td>● Know and identify literal language.</td>
<td></td>
</tr>
<tr>
<td>● Know and identify figurative language.</td>
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<tr>
<td><strong>Kansas High School Graduates Can:</strong></td>
<td></td>
</tr>
<tr>
<td>Recognize the ways in which the author’s word choice and use of figurative language deliberately influences meaning, tone, or mood within the context of the text.</td>
<td></td>
</tr>
</tbody>
</table>

#### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RL.2.4</th>
<th>RL.3.4</th>
<th>RL.4.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.</td>
<td>Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.</td>
<td>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).</td>
</tr>
</tbody>
</table>

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# Grade 3
## Reading: Literature

<table>
<thead>
<tr>
<th>RL.3.5</th>
<th>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.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**
- Define terms such as chapter, scene, and stanza.
- Use terms such as chapter, scene, and stanza when discussing or retelling.
- Describe how the organization of the text (beginning, middle, end) moves the story along.

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Understand how an author uses text features and other elements to organize text (e.g., How do chapters work together to build a book?) and affect meaning.</th>
</tr>
</thead>
</table>

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RL.2.5</th>
<th>RL.3.5</th>
<th>RL.4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Progression of Standard Across Grades</strong></td>
<td>Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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### Grade 3 Reading: Literature

<table>
<thead>
<tr>
<th>RL.3.6</th>
<th>Distinguish their own point of view from that of the narrator or those of the characters.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**

- Write about an important issue contained in a text and, share their opinion about that issue, and whether they believe they agree with a narrator or characters about that issue.
- Engage with a peer in a role play in which one student assumes the role of a character in a text and the other student is himself or herself. Converse about important topics shared in the text, and the selected character’s and selected student’s opinions about them.

**Kansas High School Graduates Can:**

- Recognize that different perspectives can be presented in different ways for different purposes.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
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<td>5</td>
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<td>6</td>
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<td>7</td>
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<tr>
<td>8</td>
</tr>
<tr>
<td>9-10</td>
</tr>
<tr>
<td>11-12</td>
</tr>
</tbody>
</table>

**RL.2.6**

- Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.

**RL.3.6**

- Distinguish their own point of view from that of the narrator or those of the characters.

**RL.4.6**

- Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.
### Grade 3
**Reading: Literature**

| RL.3.7 | 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 character or setting). |

**To address this standard, students could:**
- Define and describe how aspects of illustrations contribute to the mood in a story.
- Define and describe how aspects of illustrations contribute to the understanding of the character and/or setting.
- Describe how the illustrations add meaning to the words.

**Kansas High School Graduates Can:**
Adjust their reading to accommodate non-print formats (illustrations, graphs, video, etc.) in addition to print formats, in order to understand content.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RI.2.7</th>
<th>RL.3.7</th>
<th>RL.4.7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot</td>
<td>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 character or setting).</td>
<td>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 descriptions and directions in the text.</td>
</tr>
</tbody>
</table>
### Grade 3
Reading: Literature

<table>
<thead>
<tr>
<th>RL.3.8</th>
<th>(Not applicable for literature)</th>
</tr>
</thead>
</table>

**To address this standard, students **could:**

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Adjust their reading to accommodate non-print formats (illustrations, graphs, video, etc.) in addition to print formats, in order to understand content.</th>
</tr>
</thead>
</table>

**Progression of Standard Across Grades**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

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### Grade 3

**Reading: Literature**

<table>
<thead>
<tr>
<th>RL.3.9</th>
<th>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).</th>
</tr>
</thead>
</table>

**To address this standard, students could:**

- Read books in a series, and discuss with peers similarities and differences in themes, settings, and plots from one book to the next.
- Create a plot diagram of two different books in a series and discuss similarities and differences with peers or adults.

**Kansas High School Graduates Can:**

Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RL.2.9</th>
<th>RL.3.9</th>
<th>RL.4.9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.</strong></td>
<td>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).</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
## Grade 3
### Reading: Literature

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RL.3.10</td>
<td>Use knowledge of language and its conventions when reading to recognize and observe differences between the conventions of spoken and written standard English.</td>
</tr>
</tbody>
</table>

To address this standard, students *could*:

- Partner with a peer to attempt to record a phonetic interpretation of everything he or she says during a casual conversation. With peers, analyze the differences between what was said and what was recorded.
- Read examples of dialect in text and discuss with peers the differences in conventions when dialect is recorded accurately in a text versus when statements are written using standard English.

### Kansas High School Graduates Can:
Apply their knowledge of language and how it works to a variety of contexts and situations (e.g., a job interview, formal and informal settings).

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Use knowledge of language and its conventions to compare formal and informal uses of English.</td>
</tr>
<tr>
<td>1</td>
<td>Use knowledge of language and its conventions when reading to recognize and observe differences between the conventions of spoken and written standard English.</td>
</tr>
<tr>
<td>2-3-4</td>
<td>Use knowledge of language and its conventions when reading.</td>
</tr>
</tbody>
</table>
Grade 3
Reading: Literature

<table>
<thead>
<tr>
<th>RL.3.11</th>
<th>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Use sentence-level context as a clue to the meaning of a word or phrase.</td>
</tr>
<tr>
<td></td>
<td>b. Determine the meaning of the new word formed when a known affix is added to a known word.</td>
</tr>
<tr>
<td></td>
<td>c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).</td>
</tr>
<tr>
<td></td>
<td>d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.</td>
</tr>
</tbody>
</table>

To address this standard, students could:
- Use manipulatives to practice creating words using a set of teacher-provided affixes and root words.
- Engage in a scavenger hunt for words in a text they have read that might use familiar affixes or root words.

Kansas High School Graduates Can:
Understand vocabulary and word use in a variety of contexts by consistently building knowledge of new words, as well as employing strategies for determining meanings of unfamiliar words.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RL.2.11</th>
<th>RL.3.11</th>
<th>RL.4.11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 2 reading and content, choosing flexibly from a variety of strategies. (Click link above for details.)</td>
<td>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies. (See details above.)</td>
<td>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. (Click link above for details.)</td>
</tr>
</tbody>
</table>

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# Grade 3
Reading: Literature

| **RL.3.12** | Demonstrate understanding of word relationships and nuances in word meanings.  
  a. Distinguish the literal and figurative meanings of words and phrases in context.  
  b. Identify real-life connections between words and their uses.  
  c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty. |
|---|---|

**To address this standard, students could:**
- Participate in a word-image match in which students match a set of words to a set of images and explain the reasons why they matched the two as they did.
- Participate in a human graph in which they share their opinions about characters in a text and the degree to which they believe they are good/bad, kind/evil, etc. Once they find their places in the human graph, students share the words they would use their own words to describe the characters, and why they might not describe them as entirely evil, entirely good, etc.

**Kansas High School Graduates Can:**
Understand word meanings, and nuances in word meanings when reading.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th><strong>RL.2.12</strong></th>
<th><strong>RL.3.12</strong></th>
<th><strong>RL.4.12</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate understanding of word relationships and nuances in word meanings. (Click link above for details.)</td>
<td>Demonstrate understanding of word relationships and nuances in word meanings. (See details above.)</td>
<td>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Click link above for details.)</td>
<td></td>
</tr>
</tbody>
</table>
# Grade 3
## Reading: Literature

<table>
<thead>
<tr>
<th>RL.3.13</th>
<th>Read and comprehend high quality dramas, prose and poetry of appropriate quantitative and qualitative complexity for Grade 3.</th>
</tr>
</thead>
</table>

**To address this standard, students **could**:**
- Select and read increasingly complex literary texts at or above grade level.

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Interpret meaning from a variety of texts on their own.</th>
</tr>
</thead>
</table>

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RL.2.13</th>
<th>RL.3.13</th>
<th>RL.4.13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read and comprehend high quality dramas, prose and poetry of appropriate quantitative and qualitative complexity for Grade 2.</td>
<td>Read and comprehend high quality dramas, prose and poetry of appropriate quantitative and qualitative complexity for Grade 3.</td>
<td>Read and comprehend high quality dramas, prose and poetry of appropriate quantitative and qualitative complexity for Grade 4.</td>
</tr>
</tbody>
</table>
### Grade 3

**Reading: Informational**

<table>
<thead>
<tr>
<th>RI.3.1</th>
<th>Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**
- Construct questions using *who, what, where, when, why,* and *how.*
- Use text and text features to ask and answer key idea/detail questions.
- Identify the location of the answer in the text (by giving a page number, pointing to the answer, etc.)

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Read closely through multiple interactions with a text in order to determine what the text says explicitly and to make logical inferences; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</th>
</tr>
</thead>
</table>

**Progression of Standard Across Grades**

<table>
<thead>
<tr>
<th>RI.2.1</th>
<th>RI.3.1</th>
<th>RI.4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask and answer such questions as <em>who, what, where, when, why,</em> and <em>how</em> to demonstrate understanding of key details in a text.</td>
<td>Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
<td>Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</td>
</tr>
</tbody>
</table>
### Grade 3
#### Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.2</th>
<th>Determine the main idea of a text; recount the key details and explain how they support the main idea.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**
- Use text, pictures, photographs, illustrations, etc., to ask and answer key detail questions.
- Create a storyboard or drawing showing their understanding of the key details of a text and how they contribute to the main idea.

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RI.2.2</th>
<th>RI.3.2</th>
<th>RI.4.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the main topic of a multi-paragraph text as well as the focus of specific paragraphs within the text.</td>
<td>Determine the main idea of a text; recount the key details and explain how they support the main idea.</td>
<td>Determine the main idea of a text and explain how it is supported by key details; summarize the text.</td>
<td></td>
</tr>
</tbody>
</table>
# Grade 3
## Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.3</th>
<th>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.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**
- Use language that pertains to time, sequence and cause/effect when describing relationships.
- Use of digital tools to present a timeline explaining the connection between several related historical events.
- Design a multimedia presentation to explain the steps in a scientific procedure, or the steps needed to follow in order to solve a mathematical problem.

**Kansas High School Graduates Can:**
- Extract meaning and purpose from informational text by analyzing its structure and organization.

<table>
<thead>
<tr>
<th><strong>Progression of Standard Across Grades</strong></th>
<th>RI.2.3</th>
<th>RI.3.3</th>
<th>RI.4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.</td>
<td>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.</td>
<td>Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.</td>
<td></td>
</tr>
</tbody>
</table>
### Grade 3
#### Reading: Informational

| **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. |

**To address this standard, students could:**
- Discuss the meanings of words used to describe different weather phenomena after reading an article about weather in the Midwest.
- Work with peers to list key words in an informational text they have just read; discuss, determine, or look up their meanings; and discuss other situations in which those words might be used.

**Kansas High School Graduates Can:**

Recognize the ways in which the author’s word choice and use of figurative language deliberately influences meaning, tone, or mood within the context of the text.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th><strong>RI.2.4</strong></th>
<th><strong>RI.3.4</strong></th>
<th><strong>RI.4.4</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.</td>
<td>Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.</td>
<td>Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</td>
</tr>
</tbody>
</table>

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# Grade 3
## Reading: Informational

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI.3.5</td>
<td>Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.</td>
</tr>
</tbody>
</table>

**To address this standard, students could:**

- Participate in an “information hunt” that requires the use of text features to find information about a given topic in a teacher-selected text.

**Kansas High School Graduates Can:**

Understand how an author uses text features and other elements to organize text (e.g., How do chapters work together to build a book?) and affect meaning.

---

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>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.</td>
</tr>
<tr>
<td>1-2</td>
<td>Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.</td>
</tr>
<tr>
<td>9-10</td>
<td>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.</td>
</tr>
</tbody>
</table>

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Grade 3
Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.6</th>
<th>Distinguish their own point of view from that of the author of a text.</th>
</tr>
</thead>
</table>

To address this standard, students *could*:
- Understand what impacts the creation of a point of view.
- Identify their own point of view.
- Compare and contrast their viewpoint with that of the author's.

**Kansas High School Graduates Can:** Recognize that different perspectives can be presented in different ways for different purposes.

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RI.2.6</th>
<th>RI.3.6</th>
<th>RI.4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the main purpose of a text, including what the author wants to answer, explain, or describe.</td>
<td>Distinguish their own point of view from that of the author of a text.</td>
<td>Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.</td>
<td></td>
</tr>
</tbody>
</table>
### Grade 3
#### Reading: Informational

<table>
<thead>
<tr>
<th>Standard (RI.3.7)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>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).</td>
<td></td>
</tr>
</tbody>
</table>

**To address this standard, students could:**

- Explain information gained from illustrations.
- Synthesize information gained from visual text features and information from written text to aid in understanding.

#### Kansas High School Graduates Can:

Adjust their reading to accommodate non-print formats (illustrations, graphs, video, etc.) in addition to print formats, in order to understand content.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Standard (RI.2.7)</th>
<th>Standard (RI.3.7)</th>
<th>Standard (RI.4.7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI.2.7</td>
<td>Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.</td>
<td>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).</td>
<td>Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.</td>
</tr>
</tbody>
</table>

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## Grade 3
### Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.8</th>
<th>Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).</th>
</tr>
</thead>
</table>

**To address this standard, students could:**

- Explain information gained from illustrations.
- Use the information from illustrations to answer questions about the text.

**Kansas High School Graduates Can:**

Follow the logic of an argument based on the validity of the claim and evidence presented.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RI.2.8</th>
<th>RI.3.8</th>
<th>RI.4.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe how reasons support specific points the author makes in a text.</td>
<td>Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).</td>
<td>Explain how an author uses reasons and evidence to support particular points in a text.</td>
</tr>
</tbody>
</table>
## Grade 3
### Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.9</th>
<th>Compare and contrast the most important points and key details presented in two texts on the same topic.</th>
</tr>
</thead>
</table>

**To address this standard, students *could*:**

- Understand the difference between compare and contrast.
- Determine the most important points and key details.
- Compare and contrast texts on the same topic.

**Kansas High School Graduates Can:**

Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RI.2.9</th>
<th>RI.3.9</th>
<th>RI.4.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare and contrast the most important points presented by two texts on the same topic.</td>
<td>Compare and contrast the most important points and key details presented in two texts on the same topic.</td>
<td>Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.</td>
</tr>
</tbody>
</table>

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# Grade 3
## Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.10</th>
<th>Use knowledge of language and its conventions when reading to recognize and observe differences between the conventions of spoken and written standard English.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**

- Engage in a conversation with a friend about a topic covered in an article they have read. Then create a Venn diagram showing the differences they notice between the language used in the article versus the language used in their conversation.
- Sort sentences printed on cards into piles according to which were recorded as spoken and which were taken from an article, then discuss the qualities of the sentences in the “spoken” pile and how they differ from the pile of sentences taken from an article.

<table>
<thead>
<tr>
<th>Kansas High School Graduates Can:</th>
<th>Apply their knowledge of language and how it works to a variety of contexts and situations (e.g., a job interview, formal and informal settings).</th>
</tr>
</thead>
</table>

## Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RI.2.10</th>
<th>RI.3.10</th>
<th>RI.4.10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use knowledge of language and its conventions to compare formal and informal uses of English.</td>
<td>Use knowledge of language and its conventions when reading to recognize and observe differences between the conventions of spoken and written standard English.</td>
<td>Use knowledge of language and its conventions when reading to differentiate between contexts that call for formal English and situations where informal discourse is appropriate.</td>
</tr>
</tbody>
</table>

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## Grade 3

### Reading: Informational

| RI.3.11 | Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies.  
| a. Use sentence-level context as a clue to the meaning of a word or phrase.  
| b. Determine the meaning of the new word formed when a known affix is added to a known word.  
| c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., company, companion).  
| d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases. |

### To address this standard, students could:

- Discuss with peers the strategy or strategies they used to determine the meaning of an unknown word in a text.

**Kansas High School Graduates Can:**

Understand vocabulary and word use in a variety of contexts by consistently building knowledge of new words, as well as employing strategies for determining meanings of unfamiliar words.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>K-1</th>
<th>RI.2.11</th>
<th>RI.3.11</th>
<th>RI.4.11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 2 reading and content, choosing flexibly from a variety of strategies. (Click link above for details.)</td>
<td>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on Grade 3 reading and content, choosing flexibly from a range of strategies. (See details above.)</td>
<td>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. (Click link above for details.)</td>
<td></td>
</tr>
</tbody>
</table>
### Grade 3
**Reading: Informational**

| RI.3.12 | Demonstrate understanding of word relationships and nuances in word meanings.  
|         | a. Distinguish the literal and figurative meanings of words and phrases in context.  
|         | b. Identify real-life connections between words and their uses.  
|         | c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty. |

**To address this standard, students could:**

- Discuss with peers the difference between the words society, town, community, city, and neighborhood.

| Kansas High School Graduates Can: | Understand word meanings, and nuances in word meanings when reading. |

<table>
<thead>
<tr>
<th>Progression of Standard Across Grades</th>
<th>RI.2.12</th>
<th>RI.3.12</th>
<th>RI.4.12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demonstrate understanding of word relationships and nuances in word meanings. (Click link above for details.)</td>
<td>Demonstrate understanding of word relationships and nuances in word meanings. (See details above.)</td>
<td>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Click link above for details.)</td>
</tr>
</tbody>
</table>
# Grade 3

## Reading: Informational

<table>
<thead>
<tr>
<th>RI.3.13</th>
<th>Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for Grade 3.</th>
</tr>
</thead>
</table>

**To address this standard, students could:**
- Select and read increasingly complex informational texts at or above grade level.

**Kansas High School Graduates Can:**
- Interpret meaning from a variety of informational texts.

### Progression of Standard Across Grades

<table>
<thead>
<tr>
<th>RI.2.13</th>
<th>RI.3.13</th>
<th>RI.4.13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for Grade 2.</td>
<td>Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for Grade 3.</td>
<td>Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for Grade 4.</td>
</tr>
</tbody>
</table>
Math Curriculum
KS Grade 3 Mathematics Content Standards Overview

Critical Areas for Mathematics in Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

1. Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

2. Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, \(\frac{1}{2}\) of the paint in a small bucket could be less paint than \(\frac{1}{3}\) of the paint in a larger bucket, but \(\frac{1}{3}\) of a ribbon is longer than \(\frac{1}{5}\) of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

4. Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.
## Standards for Mathematical Practice in Grade 3

The State Standards for Mathematical Practice are practices expected to be integrated into every mathematics lesson for all students Grades K-12. Below are a few examples of how these Practices may be integrated into tasks that Grade 3 students complete.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Explanation and Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Make Sense and Persevere in Solving Problems.</strong></td>
<td>Mathematically proficient students in Grade 3 examine problems, can make sense of the meaning of the task, and find an entry point or a way to start the task. Grade 3 students also develop a foundation for problem solving strategies and become independently proficient on using those strategies to solve new tasks. They might use concrete objects or pictures to show the actions of a problem. If students are not at first making sense of a problem or seeing a way to begin, they ask questions that will help them get started. They are expected to persevere while solving tasks; that is, if students reach a point in which they are stuck, they can reexamine the task in a different way and continue to solve the task. Students in Grade 3 complete a task by asking themselves the question, “Does my answer make sense?” Example: to solve a problem involving multi-digit numbers, they might first consider similar problems that involve multiples of ten or one hundred. Once they have a solution they look back at the problem to determine if the solution is reasonable and accurate. They often check their answers to problems using a different method or approach.</td>
</tr>
<tr>
<td><strong>2) Reason abstractly and quantitatively.</strong></td>
<td>Mathematically proficient students in Grade 3 recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of the quantities. This involved two processes: decontextualizing and contextualizing. In Grade 3, students represent situations by decontextualizing tasks into numbers and symbols. For example, to find the area of the floor of a rectangular room that measures 10 ft by 12 ft, a student might represent the problem as an equation, solve it mentally, and record the problem and solution as 10 x 12 = 120 ft squared. She has decontextualized the problem. When she states at the end that the area of the room is 120 square feet, she has contextualized the answer in order to solve the original problem. Problems like this that begin with a context and are then represented with mathematical objects or symbols are also examples of modeling with mathematics (SMP 4).</td>
</tr>
<tr>
<td><strong>3) Construct viable arguments and critique the reasoning of others.</strong></td>
<td>Mathematically proficient students in Grade 3 accurately use definitions and previously established solutions to construct viable arguments about mathematics. Grade 3 students might construct arguments using concrete referents such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” They explain their thinking to others and respond to others’ thinking. For example, when comparing the unit fractions 1/3 and 1/4, students may generate their own representation of both fractions and then critique each other’s reasoning in class, as they connect their arguments to the representations that they created. Students in Grade 3 present their arguments in the form of representations, actions on those representations, and explanations in words (oral and written).</td>
</tr>
<tr>
<td><strong>4) Model with mathematics.</strong></td>
<td>Mathematically proficient students in Grade 3 experiment with representing problem situations in multiple ways, including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. They model real-life mathematical situations with a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. Students should have ample opportunities to connect the different representations and explain the connections. Grade 3 students should evaluate their results in the context of the situation and reflect on whether the results make sense.</td>
</tr>
<tr>
<td><strong>5) Use appropriate tools strategically.</strong></td>
<td>Mathematically proficient students in Grade 3 consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. The tools that students in Grade 3 might use physical objects (place value (base ten) blocks, hundreds charts, number lines, tape diagrams, fraction bars, arrays or area models, tables, graphs, and concrete geometric shapes (e.g. pattern blocks, 3-d solids) paper and pencil, rulers and other measuring tools, grid paper, virtual manipulatives, and concrete geometric shapes (e.g.,</td>
</tr>
</tbody>
</table>
Students should also have experiences with educational technologies, such as calculators and virtual manipulatives that support conceptual understanding and higher-order thinking skills. During classroom instruction, students should have access to various mathematical tools as well as paper, and determine which tools are the most appropriate to use. For example, when comparing $16\text{aaa}34$, students can use benchmark fractions and the number line to reason and explain that $34$ would be placed to the right of $12$ because it is a “a little more than $12$ or they might say “34 $\text{i}i\text{ii}$ 14 away from 1 whole”. When students model situations with mathematics, they are choosing tools appropriately (SMP 5). As they decontextualize the situation and represent it mathematically, they are also reasoning abstractly (SMP 2).

| 6) Attend to precision. | Mathematically proficient students in Grade 3 are precise in their communication, calculations, and measurements. In all mathematical tasks, they communicate clearly, using grade-level appropriate vocabulary accurately as well as giving precise explanations and reasoning regarding their process of finding solutions. For example, while measuring objects iteratively (repetitively), students check to make sure that there are no gaps or overlaps. In using representations, such as pictures, tables, graphs, or diagrams, they use appropriate labels to communicate the meaning of their representation. During tasks involving number sense, students check their work to ensure the accuracy and reasonableness of solutions. |
| 7) Look for and make use of structure. | Mathematically proficient students in Grade 3 carefully look for patterns and structures in the number system and other areas of mathematics. Grade 3 students use structures such as place value, the properties of operations, other generalizations about the behavior of the operations (for example, the less you subtract, the greater the difference), and attributes of shapes to solve problems. In many cases, they have identified and described these structures through repeated reasoning (SMP 8). For example, when Grade 3 students calculate $16 \times 9$, they might apply the structure of place value and the distributive property to find the product: $16 \times 9 = (10 + 6) \times 9 = (10 \times 9) + (6 \times 9)$. Students in Grade 3 should be using and explaining how they are using the different properties of operations to solve problems. |
| 8) Look for and express regularity in repeated reasoning. | Mathematically proficient students in Grade 3 notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don’t know. For example, if students are asked to find the product of $7 \times 8$, they might decompose $7$ into $5$ and $2$ and then multiply $5 \times 8$ and $2 \times 8$ to arrive at $40 + 16$ or $56$. Mathematically proficient 3rd graders formulate conjectures about what they notice. In addition, third graders continually evaluate their work by asking themselves, “Does this make sense?” |
How to Read the New Grade Level Standards

Standards define what students should understand and be able to do.

Clusters are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject. At the beginning of each cluster, the bold label is referred to as the Cluster Heading.

Domains are larger groups of related standards. Standards from different domains may sometimes be closely related.

Tagging System

Each standard has both a 2017 and a 2010 tag identified within it. Tags are used to help identify resources associated with the standard. Since there were changes made from the 2010 Standards to the 2017 Standards some of the tags associated with a standard also changed. In order to better help educators locate appropriate resources related to a particular standard the standards review committee inserted both tags. For example, if an educator wanted to find resources associated with a particular standard they would want to search under the 2010 tag. In some cases the 2017 and 2010 tag will be the same while in others they will be different. Furthermore, some standards were created in 2017 and therefore will not have a 2010 tag, these standards will have (2017) list as the 2010 tag.

These Standards do not dictate curriculum or teaching methods. For example, just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time. Or, a teacher might prefer to teach a topic of his or her own choosing that leads, as a byproduct, to students reaching the standards for topics A and B.

What students can learn at any particular grade level depends upon what they have learned before. Of necessity therefore, grade placements for specific topics have been made on the basis of state and international comparisons and the collective experience and collective professional judgment of educators, researchers and mathematicians. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on their current understanding.
Operations and Algebraic Thinking 3.OA

Represent and solve problems involving multiplication and division.

3.OA.1. Interpret products of whole numbers, (e.g. interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each.) (3.OA.1)

3.OA.2. 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.) (3.OA.2)

3.OA.3. 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.) Refer to shaded section of Table 2 for specific situation types. (3.OA.3)

3.OA.4. Determine the unknown whole number in a multiplication or division equation by using related equations. For example, determine the unknown number that makes the equation true in each of the equations $8 \cdot ? = 48$; $5 = \square \div 3$; $6 \times 6 = \square$ (3.OA.4)

Understand properties of multiplication and the relationship between multiplication and division.

3.OA.5. Apply properties of operations as strategies to multiply and divide. Examples: If $6 \cdot 4 = 24$ is known, then $4 \cdot 6 = 24$ is also known. (Commutative property of multiplication.) $3 \cdot 5 \cdot 2$ can be found by $3 \cdot 5 = 15$, then $15 \cdot 2 = 30$, or by $5 \cdot 2 = 10$, then $3 \cdot 10 = 30$. (Associative property of multiplication.) Knowing that $8 \cdot 5 = 40$ and $8 \cdot 2 = 16$, one can find $8 \cdot 7$ as $8 \cdot (5 + 2) = (8 \cdot 5) + (8 \cdot 2) = 40 + 16 = 56$. (Distributive property.) Students need not use formal terms for these properties. (3.OA.5)

3.OA.6. Understand division as an unknown-factor problem. For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8. (3.OA.6)

Multiply and divide within 100 (basic facts up to 10 x 10).

3.OA.7. Fluently (efficiently, accurately, and flexibly) multiply and divide with single digit multiplications and related divisions using strategies (e.g. relationship between multiplication and division, doubles, double and double again, half and then double, etc.) or properties of operations. (3.OA.7)

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

3.OA.8. Solve two-step word problems using any of the four operations. Represent these problems using both situation equations and/or solution equations with a letter or symbol standing for the unknown quantity (refer to Table 1 and Table 2 and standard 3.OA.3). Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers. (3.OA.8)

For Example:

A clown had 20 balloons. He sold some and has 12 left. Each balloon costs $2. How much money did he make?

Situation Equation: $20 - n = 12$

$n \times \$2 = \boxed{\square}$

Solution Equation: $20 - 12 = n$

$n \times \$2 = \boxed{\square}$

2017 KS Grade 3 Math Standards
3.OA.9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations (See Table 5). 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. (3.OA.9)

**Number and Operations in Base Ten 3.NBT**
(Numbers & Operations Base 10 Progression K-5 Pg. 12)

**Use place value understanding and properties of operations to perform multi-digit arithmetic.**

3.NBT.1. Use place value understanding to round whole numbers to the nearest 10 or 100. (3.NBT.1)

3.NBT.2. Fluently (efficiently, accurately, & flexibly) add and subtract within 1000 using strategies (e.g. composing/decomposing by like base-10 units, using friendly or benchmark numbers, using related equations, compensation, number line, etc.) and algorithms (including, but not limited to: traditional, partial-sums, etc.) based on place value, properties of operations, and/or the relationship between addition and subtraction. (3.NBT.2)

3.NBT.3. Multiply one-digit whole numbers by multiples of 10 in the range 10 to 90 (e.g. 9 \cdot 80, 5 \cdot 60) using strategies based on place value and properties of operations. (3.NBT.3)

**Number and Operations—Fractions 3.NF**

**Develop understanding of fractions as numbers.**
(Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)
(Number and Operations – Fractions Progression Pg. 3-5)

3.NF.1. Understand a fraction \( \frac{1}{b} \) as the quantity formed by 1 part when a whole is partitioned into \( b \) equal parts; understand a fraction \( \frac{a}{b} \) as the quantity formed by \( a \) parts of size \( \frac{1}{b} \). (3.NF.1)

3.NF.2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.

3.NF.2a. Represent a fraction \( \frac{1}{b} \) 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 \( \frac{1}{b} \) and that the endpoint of the part based at 0 locates the number \( \frac{1}{b} \) on the number line. (3.NF.2a)

Ex:

```
  1 1 1
3 3 3
```

3.NF.2b. Represent a fraction \( \frac{a}{b} \) on a number line diagram by marking off \( a \) lengths \( \frac{1}{b} \) from 0. Recognize that the resulting interval has size \( \frac{a}{b} \) and that its endpoint locates the number \( \frac{a}{b} \) on the number line (\( a \) is the countable units of \( \frac{1}{b} \) that determines the place on the number line). (3.NF.2b)

3.NF.3. Explain equivalence of fractions, and compare fractions by reasoning about their size (it is a mathematical convention that when comparing fractions, the whole is the same size).

3.NF.3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. (3.NF.3a)
3.NF.3b. Recognize and generate simple equivalent fractions, \( e.g. \frac{1}{2} = \frac{2}{4}, \frac{4}{6} = \frac{2}{3} \) Explain why the fractions are equivalent, \( e.g. \) by using a visual fraction model. (3.NF.3b)

3.NF.3c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form \( 3 = \frac{3}{1} \); recognize that \( \frac{6}{1} = 6 \); locate \( \frac{4}{4} \) and 1 at the same point of a number line diagram. (3.NF.3c)

3.NF.3d. 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 relational symbols \( >, <, =, \) or \( \neq \), and justify the conclusions, \( e.g. \) by using a visual fraction model. (3.NF.3d)

**Measurement and Data 3.MD**

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

3.MD.1. Tell and write time to the nearest minute using a.m. and p.m. 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. (See Table 1) (3.MD.1)

3.MD.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l) (Excludes cubed units such as \( cm^3 \) and finding the geometric volume of a container). (3.MD.2)

3.MD.3. 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. (Excludes multiplicative comparison problems) (See Table 1 and Table 2). (3.MD.2)

Represent and interpret data.

3.MD.4. 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. (See Table 1). For example, draw a bar graph in which each square in the bar graph might represent 5 pets. (3.MD.3) (Measurement and Data (data part) Progression K–5 Pg. 7)

3.MD.5. 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. (3.MD.4) (Measurement and Data (data part) Progression K–5 Pg. 10)

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.MD.6. Recognize area as an attribute of plane figures and understand concepts of area measurement.

3.MD.6a. 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 (does not require standard square units). (3.MD.5a)

3.MD.6b. 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 (does not require standard square units). (3.MD.5b)

3.MD.7. Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard square units). (3.MD.6)
3.MD.8. Relate area to the operations of multiplication and addition
(Measurement and Data (measurement part) Progression K–5 Pg. 16).

3.MD.8a. 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. (3.MD.7a)

3.MD.8b. 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. (3.MD.7b)

3.MD.8c. 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 \(a \cdot b\) and \(a \cdot c\). Use area models to represent the distributive property in mathematical reasoning (Supports 3.OA.5). (3.MD.7c) (Measurement and Data (measurement part) Progression K–5 Pg. 18).

3.MD.8d. Recognize area as additive. Find areas of \textit{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. (3.MD.7d)

\begin{center}
\begin{tabular}{c}
\textbf{Example:}
\end{tabular}
\end{center}

\begin{center}
\begin{tabular}{c|c|c}
| a | b | c |
\end{tabular}
\end{center}

Students can find the total area of the shape by finding the areas of \(a\), \(b\), and \(c\) and adding them together.

**Geometric measurement:** recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

3.MD.9. 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. (3.MD.8) (Measurement and Data (measurement part) Progression K–5 Pg. 16)

**Geometry 3.G**

Reason with shapes and their attributes.

(\textit{Geometry Progression K-6 Pg. 13})

3.G.1. Understand that shapes in different categories (\textit{e.g.} rhombuses, rectangles, \textit{trapezoids}, kites and others) may share attributes (\textit{e.g. having four sides}), and that the shared attributes can define a larger category (\textit{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. Refer to inclusive definitions noted in the glossary. (3.G.1)

3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. \textit{For example, partition a shape into 4 parts with equal area, and describe the area of each part as \(\frac{1}{4}\) of the area of the shape.} (3.G.2)

\textbf{2017 vs 2010 Mathematics Standards Comparison}
<table>
<thead>
<tr>
<th>2017 Tag</th>
<th>2017 Standard</th>
<th>Changes</th>
<th>2010 Tag</th>
<th>2010 Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.OA.7</td>
<td>Fluently (efficiently, accurately, and flexibly) multiply and divide with single digit multiplications and related divisions using strategies or properties of operations.</td>
<td>Entire standard was reworded.</td>
<td>3.OA.7</td>
<td>Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</td>
</tr>
<tr>
<td>3.OA.8</td>
<td>Solve two-step word problems using any of the four operations. Represent these problems using both situation equations and/or solution equations with a letter or symbol standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers.</td>
<td>The phrase “equations with a letter standing for the unknown quantity” was replaced with “both situation equations and/or solution equations with a letter or symbol standing for the unknown quantity” The phrase “students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations)” was removed.</td>
<td>3.OA.8</td>
<td>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. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).)</td>
</tr>
<tr>
<td>3.NBT.2</td>
<td>Fluently (efficiently, accurately, &amp; flexibly) add and subtract within 1000 using strategies and algorithms (including, but not limited to: traditional, partial-sums, etc.) based on place value, properties of operations, and/or the relationship between addition and subtraction.</td>
<td>The words “(efficiently, accurately, &amp; flexibly)” were added. The phrase “(including, but not limited to: traditional, partial-sums, etc.)” was added.</td>
<td>3.NBT.2</td>
<td>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.</td>
</tr>
<tr>
<td>3.NF.2b</td>
<td>Represent a fraction ( \frac{a}{b} ) on a number line diagram by marking off ( \frac{1}{b} ) from 0. Recognize that the resulting interval has size ( \frac{a}{b} ) and that its endpoint locates the number ( \frac{a}{b} ) on the number line (( a ) is the countable units of ( \frac{1}{b} ) that determines the place on the number line).</td>
<td>The phrase “(a is the countable units of ( \frac{1}{b} ) that determines the place on the number line)” was added.</td>
<td>3.NF.2b</td>
<td>Represent a fraction ( \frac{a}{b} ) on a number line diagram by marking off a lengths ( \frac{1}{b} ) from 0. Recognize that the resulting interval has size ( \frac{a}{b} ) and that its endpoint locates the number ( \frac{a}{b} ) on the number line.</td>
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<tr>
<td>Standard</td>
<td>Content</td>
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<tr>
<td>3.NF.3</td>
<td>Explain equivalence of fractions (equal) if they are the same size, or the same point on a number line.</td>
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<tr>
<td>3.NF.3a</td>
<td>Understand two fractions as equivalent (equal) if the whole is the same size.</td>
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<tr>
<td>3.NF.3b</td>
<td>Recognize and generate simple equivalent fractions.</td>
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<tr>
<td>3.NF.3c</td>
<td>Compare two fractions with the same numerator or the same denominator by reasoning about their size.</td>
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<tr>
<td>3.NF.3d</td>
<td>Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.</td>
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<tr>
<td>3.MD.1</td>
<td>Tell and write time to the nearest minute using a.m. and p.m. and measure time intervals in minutes.</td>
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<tr>
<td>3.MD.2</td>
<td>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.</td>
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<tr>
<td>3.MD.3</td>
<td>Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.</td>
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<tr>
<td>3.MD.4</td>
<td>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.</td>
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<tr>
<td>Standard</td>
<td>Updated Text</td>
<td>Notes</td>
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<tr>
<td>3.MD.6a</td>
<td>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 (does not require standard square units).</td>
<td>The phrase “(does not require standard square units)” was added.</td>
<td></td>
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<tr>
<td>3.MD.6b</td>
<td>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 (does not require standard square units).</td>
<td>The phrase “(does not require standard square units)” was added.</td>
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<tr>
<td>3.MD.7</td>
<td>Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard square units).</td>
<td>The phrase “improved units” was replaced with “non-standard square units.”</td>
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<tr>
<td>3.G.1</td>
<td>Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. Refer to inclusive definitions noted in the glossary.</td>
<td>Phrase “Refer to inclusive definitions noted in the glossary” was added.</td>
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</table>
2017 Kansas Mathematics Standards

Flip Book
3rd Grade

This project used work created by the Departments of Education in Ohio, North Carolina, Georgia and resources created by Achieve the Core, EngageNY, Illustrative Mathematics, and NCTM.
This project attempts to organize some of the most valuable resources that help develop the intent, understanding and implementation of the 2017 Kansas Mathematics Standards. These documents provide a starting point for teachers and administrators to begin discussion and exploration into the standards. It is not the only resource to support implementation of the 2017 Kansas Mathematics Standards.

This project is built on the previous work started in the summer of 2012 from Melisa Hancock (Manhattan, KS), Debbie Thompson (Wichita, KS) and Patricia Hart (Wichita, KS) who provided the initial development of the “flip books.” The “flip books” are based on a model that Kansas had for earlier standards; however, this edition specifically targets the Kansas Mathematics Standards that were adopted in the summer of 2017. These flip books incorporate the resources from other state departments of education, the mathematics learning progressions, and other reliable sources including The National Council of Teachers of Mathematics and the National Supervisors of Mathematics. In addition, mathematics educators across the country have suggested changes/additions that could or should be made to further enhance its effectiveness. The document is posted on the KSDE Mathematics website at http://community.ksde.org/Default.aspx?tabid=5646 and will continue to undergo changes periodically. When significant changes/additions are implemented, the modifications will be posted and dated.

For questions or comments about the flipbooks, please contact Melissa Fast at the Kansas State Department of Education – mfast@ksde.org.
The (mathematics standards) call for a greater focus. Rather than racing to cover topics in today's mile-wide, inch-deep curriculum, we need to use the power of the eraser and significantly narrow and deepen how time and energy is spent in the mathematics classroom. There is a necessity to focus deeply on the major work of each grade to enable students to gain strong foundations: solid conceptual understanding, a high degree of procedural skill and fluency, and the ability to apply the mathematics they know to solve problems both in and out of the mathematics classroom. (www.achievethecore.org)

Not all standards should have the same instructional emphasis. Some groups of standards require a greater emphasis than others. In order to be intentional and systematic, priorities need to be set for planning, instruction, and assessment. “Not everything in the Standards should have equal priority” (Zimba, 2011). Therefore, there is a need to elevate the content of some standards over that of others throughout the K-12 curriculum.

When the Standards were developed the following were considerations in the identification of priorities: 1) the need to be qualitative and well-articulated; 2) the understanding that some content will become more important than other; 3) the creation of a focus means that some essential content will get a greater share of the time and resources “while the remaining content is limited in scope.” 4) a “lower” priority does not imply exclusion of content, but is usually intended to be taught in conjunction with or in support of one of the major clusters.

“The Standards are built on the progressions, so priorities have to be chosen with an eye to the arc of big ideas in the Standards. A prioritization scheme that respects progressions in the Standards will strike a balance between the journey and the endpoint. If the endpoint is everything, few will have enough wisdom to walk the path, if the endpoint is nothing, few will understand where the journey is headed. Beginnings and the endings both need particular care. ... It would also be a mistake to identify such standard as a locus of emphasis. (Zimba, 2011)

The important question in planning instruction is: “What is the mathematics you want the student to walk away with?” In order to accomplish this, educators need to think about “grain size” when planning instruction. Grain size corresponds to the knowledge you want the student to know. Mathematics is simplest at the right grain size. According to Phil Daro (Teaching Chapters, Not Lessons—Grain Size of Mathematics), strands are too vague and too large a grain size, while lessons are too small a grain size. Units or chapters produce about the right “grain size”. In the planning process educators should attend to the clusters, and think of the standards as the ingredients of a cluster. Coherence of mathematical ideas and concepts exists at the cluster level across grades.

A caution--Grain size is important but can result in conversations that do not advance the intent of this structure. Extended discussions among teachers where it is argued for “2 days” instead of “3 days” on a topic because it is a lower priority can detract from the overall intent of suggested priorities. The reverse is also true. As Daro indicates, focusing on lessons can provide too narrow a view which compromises the coherence value of closely related standards.
The video clip Teaching Chapters, Not Lessons—Grain Size of Mathematics presents Phil Daro further explaining grain size and the importance of it in the planning process. (Click on photo to view video.)

Along with “grain size”, clusters have been given priorities which have important implications for instruction. These priorities should help guide the focus for teachers as they determine allocation of time for both planning and instruction. The priorities provided help guide the focus for teachers as they determine distribution of time for both planning and instruction, helping to assure that students really understand mathematics before moving on. Each cluster has been given a priority level. As professional educators begin planning, developing and writing units, these priorities provide guidance in assigning time for instruction and formative assessment within the classroom.

Each cluster within the standards has been given a priority level influenced by the work of Jason Zimba. The three levels are referred to as — Major, Supporting and Additional. Zimba suggests that about 70% of instruction should relate to the Major clusters. The lower two priorities (Supporting and Additional) can work together by supporting the Major priorities. You can find the grade Level Focus Documents for the 2017 Kansas Math Standards at: http://community.ksde.org/Default.aspx?tabid=6340.

Recommendations for Cluster Level Priorities

**Appropriate Use:**
- Use the priorities as guidance to inform instructional decisions regarding time and resources spent on clusters by varying the degrees of emphasis.
- Focus should be on the major work of the grade in order to open up the time and space to bring the Standards for Mathematical Practice to life in mathematics instruction through sense-making, reasoning, arguing and critiquing, modeling, etc.
- Evaluate instructional materials by taking the cluster level priorities into account. The major work of the grade must be presented with the highest possible quality; the additional work of the grade should support the major priorities and not detract from them.
- Set priorities for other implementation efforts such as staff development, new curriculum development, and revision of existing formative or summative testing at the state, district or school level.

**Things to Avoid:**
- Neglecting any of the material in the standards. Seeing Supporting and Additional clusters as optional.
- Sorting clusters (from Major to Supporting to Additional) and then teaching the clusters in order. This would remove the coherence of mathematical ideas and create missed opportunities to enhance the major work of the grade with the other clusters.
- Using the cluster headings as a replacement for the actual standards. All features of the standards matter—from the practices to surrounding text, including the particular wording of the individual content standards. Guidance for priorities is given at the cluster level as a way of thinking about the content with the necessary specificity yet without going so far into detail as to comprise the coherence of the standards (grain size).
(High Leverage Teacher Actions)

The eight Mathematics Teaching Practices should be the foundation for mathematics instruction and learning. This framework was informed by over twenty years of research and presented in *Principles to Actions* by the National Council of Teachers of Mathematics (NCTM). If teachers are guided by this framework, they can move “toward improved instructional practice” and support “one another in becoming skilled at teaching in ways that matter for ensuring successful mathematics learning for all students” (NCTM, 2014, p. 12).

1. **Establish mathematics goals to focus learning.**
   Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.

2. **Implement tasks that promote reasoning and problem solving.**
   Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.

3. **Use and connect mathematical representations.**
   Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.

4. **Facilitate meaningful mathematical discourse.**
   Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.

5. **Pose purposeful questions.**
   Effective teaching of mathematics uses purposeful questions to assess and advance students’ reasoning and sense making about important mathematical ideas and relationships.

6. **Build procedural fluency from conceptual understanding.**
   Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.

7. **Support productive struggle in learning mathematics.**
   Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.

8. **Elicit and use evidence of student thinking.**
   Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.
The Standards for Mathematical Practice are practices expected to be integrated into every mathematics lesson for all students grades K-12. Below are a few examples of how these Practices may be integrated into tasks that third grade students complete.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Explanation and Example</th>
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<tbody>
<tr>
<td>1) Make Sense and Persevere in Solving Problems.</td>
<td>In third grade, mathematically proficient students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They examine problems, can make sense of the meaning of the task, and find an entry point or a way to start the task. Third grade students may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” Students listen to other students’ strategies and are able to make connections between various methods for a given problem. Example: to solve a problem involving multi-digit numbers, they might first consider similar problems that involve multiples of ten or one hundred. Once they have a solution they look back at the problem to determine if the solution is reasonable and accurate. They often check their answers to problems using a different method or approach.</td>
</tr>
<tr>
<td>2) Reason abstractly and quantitatively.</td>
<td>Mathematically proficient students in Grade 3 recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of the quantities. This involves two processes: decontextualizing and contextualizing. In Grade 3, students represent situations by decontextualizing tasks into numbers and symbols. For example, to find the area of the floor of a rectangular room that measures 10 ft. by 12 ft., a student might represent the problem as an equation, solve it mentally, and record the problem and solution as $10 \times 12 = 120$ ft. squared. She has decontextualized the problem. When she states at the end that the area of the room is 120 square feet, she has contextualized the answer in order to solve the original problem. Problems like this that begin with a context and are then represented with mathematical objects or symbols are also examples of modeling with mathematics (SMP 4).</td>
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<tr>
<td>3) Construct viable arguments and critique the reasoning of others.</td>
<td>Mathematically proficient students in Grade 3 accurately use definitions and previously established solutions to construct viable arguments about mathematics. Grade 3 students might construct arguments using concrete referents such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” They explain their thinking to others and respond to others’ thinking. For example, when comparing the unit fractions $\frac{1}{3}$ and $\frac{1}{6}$, students may generate their own representation of both fractions and then critique others’ reasoning in class, as they connect their arguments to the representations that they created. Students in Grade 3 present their arguments in the form of representations, actions on those representations, and explanations in words (oral and written).</td>
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<tr>
<td>4) Model with mathematics.</td>
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<td>Mathematically proficient students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. Students require extensive opportunities to generate various mathematical representations to both equations and story problems, and explain connections between representations as well as between representations and equations. Students should be able to use all of these representations as needed. They should evaluate their results in the context of the situation and reflect on whether the results make sense.</td>
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<th>5) Use appropriate tools strategically.</th>
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<tr>
<td>Mathematically proficient students in Grade 3 consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. The tools that students in Grade 3 might use are: physical objects (place value (base ten) blocks, hundreds charts, number lines, tape diagrams, fraction bars, arrays or area models, tables, graphs, and concrete geometric shapes (e.g. pattern blocks, 3-D solids) paper and pencil, rulers and other measuring tools, grid paper, virtual manipulatives, and concrete geometric shapes (e.g., pattern blocks, 3-D solids), etc. Students should also have experiences with educational technologies, such as calculators and virtual manipulatives that support conceptual understanding and higher-order thinking skills. During classroom instruction, students should have access to various mathematical tools as well as paper, and determine which tools are the most appropriate to use. For example, when comparing $\frac{1}{2}$ and $\frac{3}{4}$, students can use benchmark fractions and the number line to reason and explain that $\frac{3}{4}$ would be placed to the right of $\frac{1}{2}$ because it is a “a little more than $\frac{1}{2}$ or they might say “$\frac{3}{4}$ is $\frac{1}{4}$ away from 1 whole”. When students model situations with mathematics, they are choosing tools appropriately (SMP 5). As they decontextualize the situation and represent it mathematically, they are also reasoning abstractly (SMP2).</td>
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<th>6) Attend to precision.</th>
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<tr>
<td>Mathematically proficient students in Grade 3 are precise in their communication, calculations, and measurements. In all mathematical tasks, they communicate clearly, using grade-level appropriate vocabulary accurately as well as giving precise explanations and reasoning regarding their process of finding solutions. For example, while measuring objects iteratively (repetitively), students check to make sure that there are no gaps or overlaps. In using representations, such as pictures, tables, graphs, or diagrams, they use appropriate labels to communicate the meaning of their representation. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units. During tasks involving number sense, students check their work to ensure the accuracy and reasonableness of solutions.</td>
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<th>7) Look for and make use of structure.</th>
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<td>Mathematically proficient students in Grade 3 carefully look for patterns and structures in the number system and other areas of mathematics. Grade 3 students use structures such as place value, the properties of operations, other generalizations about the behavior of the operations (for example, the less you subtract, the greater the difference), and attributes of shapes to solve problems. In many cases, they have identified and described these structures through repeated reasoning (SMP 8). For example, when Grade 3 students calculate $16 \times 9$, they might apply the structure of place value and the distributive property to find the product: $16 \times 9 = (10 + 6) \times 9 = (10 \times 9) + (6 \times 9)$. Students in Grade 3 should be using and explaining how they are using the different properties of operations to solve problems.</td>
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<th>8) Look for and express regularity in repeated reasoning.</th>
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<tr>
<td>Mathematically proficient students in third grade should notice repetitive actions in computation and look for more shortcut methods. For example, students might use the distributive property as a strategy for using products they know to solve products that they don’t know. Additionally, if students are asked to find the product of $7 \times 8$, they might decompose 7 into 5 and 2 and then multiply $5 \times 8$ and $2 \times 8$ to arrive at $40 + 16$ or 56. Third graders should continually evaluate their work by asking themselves, “Does this make sense?”</td>
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Implementing Standards for Mathematical Practice

This guide was created to help educators implement these standards into their classroom instruction. These are the practices for the students, and the teacher can assist students in using them efficiently and effectively.

#1 – Make sense of problems and persevere in solving them.

Summary of this Practice:
- Interpret and make meaning of the problem looking for starting points. Analyze what is given to explain to themselves the meaning of the problem.
- Plan a solution pathway instead of jumping to a solution.
- Monitor their progress and change the approach if necessary.
- See relationships between various representations.
- Relate current situations to concepts or skills previously learned and connect mathematical ideas to one another.
- Continually ask themselves, “Does this make sense?”
- Understand various approaches to solutions.

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<tr>
<th>Student Actions</th>
<th>Teacher Actions</th>
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<tr>
<td>• Actively engage in solving problems and thinking is visible (doing mathematics vs. following steps or procedures with no understanding).</td>
<td>• Allow students time to initiate a plan; using question prompts as needed to assist students in developing a pathway.</td>
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<tr>
<td>• Relate current “situation” to concepts or skills previously learned, and checking answers using different methods.</td>
<td>• Constantly ask students if their plans and solutions make sense.</td>
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<td>• Monitor and evaluate their own progress and change course when necessary.</td>
<td>• Question students to see connections to previous solution attempts and/or tasks to make sense of the current problem.</td>
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<tr>
<td>• Always ask, “Does this make sense?” as they are solving problems.</td>
<td>• Consistently ask students to defend and justify their solution(s) by comparing solution paths.</td>
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</table>

What questions develop this Practice?
- How would you describe the problem in your own words? How would you describe what you are trying to find?
- What do you notice about…?
- What information is given in the problem? Describe the relationship between the quantities.
- Describe what you have already tried. What might you change? Talk me through the steps you’ve used to this point.
- What steps in the process are you most confident about? What are some other strategies you might try?
- What are some other problems that are similar to this one?
- How might you use one of your previous problems to help you begin? How else might you organize…represent…show…?

What are the characteristics of a good math task for this Practice?
- Requires students to engage with conceptual ideas that underlie the procedures to complete the task and develop understanding.
- Requires cognitive effort - while procedures may be followed, the approach or pathway is not explicitly suggested by the task, or task instructions and multiple entry points are available.
- Encourages multiple representations, such as visual diagrams, manipulatives, symbols, and problem situations. Making connections among multiple representations to develop meaning.
- Requires students to access relevant knowledge and experiences and make appropriate use of them in working through the task.
#2 – Reason abstractly and quantitatively.

**Summary of this Practice:**
- Make sense of quantities and their relationships.
- Decontextualize (represent a situation symbolically and manipulate the symbols) and contextualize (make meaning of the symbols in a problem) quantitative relationships.
- Understand the meaning of quantities and are flexible in the use of operations and their properties.
- Create a logical representation of the problem.
- Attend to the meaning of quantities, not just how to compute them.

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<tr>
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<tbody>
<tr>
<td>• Use varied representations and approaches when solving problems.</td>
<td>• Ask students to explain the meaning of the symbols in the problem and in their solution.</td>
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<tr>
<td>• Represent situations symbolically and manipulating those symbols easily.</td>
<td>• Expect students to give meaning to all quantities in the task.</td>
</tr>
<tr>
<td>• Give meaning to quantities (not just computing them) and making sense of the relationships within problems.</td>
<td>• Question students so that understanding of the relationships between the quantities and/or the symbols in the problem and the solution are fully understood.</td>
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**What questions develop this Practice?**
- What do the numbers used in the problem represent? What is the relationship of the quantities?
- How is _____ related to _____?
- What is the relationship between _____ and _____?
- What does _____ mean to you? (e.g. symbol, quantity, diagram)
- What properties might you use to find a solution?
- How did you decide that you needed to use _____? Could we have used another operation or property to solve this task? Why or why not?

**What are the characteristics of a good math task for this Practice?**
- Includes questions that require students to attend to the meaning of quantities and their relationships, not just how to compute them.
- Consistently expects students to convert situations into symbols in order to solve the problem; and then requires students to explain the solution within a meaningful situation.
- Contains relevant, realistic content.
#3 – Construct viable arguments and critique the reasoning of others.

**Summary of this Practice:**
- Analyze problems and use stated mathematical assumptions, definitions, and established results in constructing arguments.
- Justify conclusions with mathematical ideas.
- Listen to the arguments of others and ask useful questions to determine if an argument makes sense.
- Ask clarifying questions or suggest ideas to improve/revise the argument.
- Compare two arguments and determine correct or flawed logic.

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<tr>
<th>Student Actions</th>
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<tbody>
<tr>
<td>Make conjectures and exploring the truth of those conjectures.</td>
<td>Encourage students to use proven mathematical understandings, (definitions, properties, conventions, theorems etc.), to support their reasoning.</td>
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<tr>
<td>Recognize and use counter examples.</td>
<td>Question students so they can tell the difference between assumptions and logical conjectures.</td>
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<tr>
<td>Justify and defend all conclusions and using data within those conclusions.</td>
<td>Ask questions that require students to justify their solution and their solution pathway.</td>
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<tr>
<td>Recognize and explain flaws in arguments, which may need to be demonstrated using objects, pictures, diagrams, or actions.</td>
<td>Prompt students to respectfully evaluate peer arguments when solutions are shared.</td>
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<tr>
<td>Encourage students to use proven mathematical understandings, (definitions, properties, conventions, theorems etc.), to support their reasoning.</td>
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<tr>
<td>Question students so they can tell the difference between assumptions and logical conjectures.</td>
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<td>Ask questions that require students to justify their solution and their solution pathway.</td>
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<tr>
<td>Prompt students to respectfully evaluate peer arguments when solutions are shared.</td>
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<tr>
<td>Ask students to compare and contrast various solution methods.</td>
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<tr>
<td>Create various instructional opportunities for students to engage in mathematical discussions (whole group, small group, partners, etc.)</td>
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**What questions develop this Practice?**
- What mathematical evidence would support your solution? How can we be sure that...? How could you prove that...?
- Will it still work if...?
- What were you considering when...? How did you decide to try that strategy?
- How did you test whether your approach worked?
- How did you decide what the problem was asking you to find? (What was unknown?)
- Did you try a method that did not work? Why didn’t it work? Would it ever work? Why or why not?
- What is the same and what is different about...? How could you demonstrate a counter-example?

**What are the characteristics of a good math task for this Practice?**
- Structured to bring out multiple representations, approaches, or error analysis.
- Embeds discussion and communication of reasoning and justification with others.
- Requires students to provide evidence to explain their thinking beyond merely using computational skills to find a solution.
- Expects students to give feedback and ask questions of others’ solutions.
#4 – Model with mathematics.

Summary of this Practice:
- Understand reasoning quantitatively and abstractly (able to decontextualize and contextualize).
- Apply the math they know to solve problems in everyday life.
- Simplify a complex problem and identify important quantities to look at relationships.
- Represent mathematics to describe a situation either with an equation or a diagram and interpret the results of a mathematical situation.
- Reflect on whether the results make sense, possibly improving/revising the model.
- Ask themselves, “How can I represent this mathematically?”

<table>
<thead>
<tr>
<th>Student Actions</th>
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<tbody>
<tr>
<td>- Apply mathematics to everyday life.</td>
<td>- Demonstrate and provide students experiences with the use of various mathematical models.</td>
</tr>
<tr>
<td>- Write equations to describe situations.</td>
<td>- Question students to justify their choice of model and the thinking behind the model.</td>
</tr>
<tr>
<td>- Illustrate mathematical relationships using diagrams, data displays, and/or formulas.</td>
<td>- Ask students about the appropriateness of the model chosen.</td>
</tr>
<tr>
<td>- Identify important quantities and analyzing relationships to draw conclusions.</td>
<td>- Assist students in seeing and making connections among models.</td>
</tr>
</tbody>
</table>

What questions develop this Practice?
- What number model could you construct to represent the problem?
- How can you represent the quantities?
- What is an equation or expression that matches the diagram..., number line..., chart..., table...?
- Where did you see one of the quantities in the task in your equation or expression?
- What math do you know that you could use to represent this situation?
- What assumptions do you have to make to solve the problem?
- What formula might apply in this situation?

What are the characteristics of a good math task for this Practice?
- Structures represent the problem situation and their solution symbolically, graphically, and/or pictorially (may include technological tools) appropriate to the context of the problem.
- Invites students to create a context (real-world situation) that explains numerical-symbolic representations.
- Asks students to take complex mathematics and make it simpler by creating a model that will represent the relationship between the quantities.
#5 – Use appropriate tools strategically.

Summary of this Practice:
- Use available tools recognizing the strengths and limitations of each.
- Use estimation and other mathematical knowledge to detect possible errors.
- Identify relevant external mathematical resources to pose and solve problems.
- Use technological tools to deepen their understanding of mathematics.
- Use mathematical models for visualize and analyze information.

<table>
<thead>
<tr>
<th>Student Actions</th>
<th>Teacher Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Choose tools that are appropriate for the task.</td>
<td>• Demonstrate and provide students experiences with the use of various math tools. A variety of tools are within the environment and readily available.</td>
</tr>
<tr>
<td>• Know when to use estimates and exact answers.</td>
<td>• Question students as to why they chose the tools they used to solve the problem.</td>
</tr>
<tr>
<td>• Use tools to pose or solve problems to be most effective and efficient.</td>
<td>• Consistently model how and when to estimate effectively, and requiring students to use estimation strategies in a variety of situations.</td>
</tr>
</tbody>
</table>

What questions develop this practice?
- What mathematical tools could we use to visualize and represent the situation?
- What information do you have?
- What do you know that is not stated in the problem? What approach are you considering trying first?
- What estimate did you make for the solution?
- In this situation would it be helpful to use...a graph..., number line..., ruler..., diagram..., calculator..., manipulative? Why was it helpful to use...?
- What can using a_____show us that _____may not?
- In what situations might it be more informative or helpful to use...?

What are the characteristics of a good math task for this Practice?
- Lends itself to multiple learning tools. (Tools may include; concrete models, measurement tools, graphs, diagrams, spreadsheets, statistical software, etc.)
- Requires students to determine and use appropriate tools to solve problems.
- Asks students to estimate in a variety of situations:
  - a task when there is no need to have an exact answer
  - a task when there is not enough information to get an exact answer
  - a task to check if the answer from a calculation is reasonable
#6 – Attend to precision.

Summary of this Practice:
• Communicate precisely with others and try to use clear mathematical language when discussing their reasoning.
• Understand meanings of symbols used in mathematics and can label quantities appropriately.
• Express numerical answers with a degree of precision appropriate for the problem context.
• Calculate efficiently and accurately.

<table>
<thead>
<tr>
<th>Student Actions</th>
<th>Teacher Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use mathematical terms, both orally and in written form, appropriately.</td>
<td>• Consistently use and model correct content terminology.</td>
</tr>
<tr>
<td>• Use and understanding the meanings of math symbols that are used in tasks.</td>
<td>• Expect students to use precise mathematical vocabulary during mathematical conversations.</td>
</tr>
<tr>
<td>• Calculate accurately and efficiently.</td>
<td>• Question students to identify symbols, quantities and units in a clear manner.</td>
</tr>
<tr>
<td>• Understand the importance of the unit in quantities.</td>
<td></td>
</tr>
</tbody>
</table>

What questions develop this Practice?
• What mathematical terms apply in this situation? How did you know your solution was reasonable?
• Explain how you might show that your solution answers the problem.
• Is there a more efficient strategy?
• How are you showing the meaning of the quantities?
• What symbols or mathematical notations are important in this problem?
• What mathematical language..., definitions..., properties can you use to explain...?
• How could you test your solution to see if it answers the problem?

What are the characteristics of a good math task for this Practice?
• Requires students to use precise vocabulary (in written and verbal responses) when communicating mathematical ideas.
• Expects students to use symbols appropriately.
• Embeds expectations of how precise the solution needs to be (some may more appropriately be estimates).
#7 – Look for and make use of structure.

Summary of this Practice:
- Apply general mathematical rules to specific situations.
- Look for the overall structure and patterns in mathematics.
- See complicated things as single objects or as being composed of several objects.

<table>
<thead>
<tr>
<th>Student Actions</th>
<th>Teacher Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Look closely at patterns in numbers and their relationships to solve problems.</td>
<td>• Encourage students to look for something they recognize and having students apply the information in identifying solution paths (i.e. compose/decompose numbers and geometric figures, identify properties, operations, etc.)</td>
</tr>
<tr>
<td>• Associate patterns with the properties of operations and their relationships.</td>
<td>• Expect students to explain the overall structure of the problem and the big math idea used to solve the problem.</td>
</tr>
<tr>
<td>• Compose and decompose numbers and number sentences/expressions.</td>
<td></td>
</tr>
</tbody>
</table>

What questions develop this Practice?
- What observations do you make about...? What do you notice when...?
- What parts of the problem might you eliminate..., simplify...?
- What patterns do you find in...?
- How do you know if something is a pattern?
- What ideas that we have learned before were useful in solving this problem?
- What are some other problems that are similar to this one? How does this relate to...?
- In what ways does this problem connect to other mathematical concepts?

What are the characteristics of a good math task for this Practice?
- Requires students to look for the structure within mathematics in order to solve the problem. (i.e. – decomposing numbers by place value; working with properties; etc.)
- Asks students to take a complex idea and then identify and use the component parts to solve problems. i.e. Building on the structure of equal sharing, students connect the understanding to the traditional division algorithm. When “unit size” cannot be equally distributed, it is necessary to break down into a smaller “unit size”. (example below)

```
4  \underline{351}
-32
\underline{31}
-28
\underline{3}

3 hundreds units cannot be distributed into 4 equal groups. Therefore, they must be broken down into tens units.
There are now 35 tens units to distribute into 4 groups. Each group gets 8 sets of tens, leaving 3 extra tens units that need to become ones units.
This leaves 31 ones units to distribute into 4 groups. Each group gets 7 ones units, with 3 ones units remaining. The quotient means that each group has 87 with 3 left.
```
- Expects students to recognize and identify structures from previous experience(s) and apply this understanding in a new situation. i.e. $7 \times 8 = (7 \times 5) + (7 \times 3)$ OR $7 \times 8 = (7 \times 4) + (7 \times 4)$ new situations could be, distributive property, area of composite figures, multiplication fact strategies.
#8 – Look for and express regularity in repeated reasoning.

**Summary of this Practice:**
- See repeated calculations and look for generalizations and shortcuts.
- See the overall process of the problem and still attend to the details.
- Understand the broader application of patterns and see the structure in similar situations.
- Continually evaluate the reasonableness of their intermediate results.

<table>
<thead>
<tr>
<th>Student Actions</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Notice if processes are repeated and look for both general methods and shortcuts.</td>
<td>Ask what math relationships or patterns can be used to assist in making sense of the problem.</td>
</tr>
<tr>
<td>Evaluate the reasonableness of intermediate results while solving.</td>
<td>Ask for predictions about solutions at midpoints throughout the solution process.</td>
</tr>
<tr>
<td>Make generalizations based on discoveries and constructing formulas when appropriate.</td>
<td>Question students to assist them in creating generalizations based on repetition in thinking and procedures.</td>
</tr>
</tbody>
</table>

**What questions develop this Practice?**
- Will the same strategy work in other situations?
- Is this always true, sometimes true or never true? How would we prove that...?
- What do you notice about...?
- What is happening in this situation? What would happen if...?
- Is there a mathematical rule for...?
- What predictions or generalizations can this pattern support? What mathematical consistencies do you notice?

**What are the characteristics of a good math task for this Practice?**
- Present several opportunities to reveal patterns or repetition in thinking, so students can make a generalization or rule.
- Requires students to see patterns or relationships in order to develop a mathematical rule.
- Expects students to discover the underlying structure of the problem and come to a generalization.
- Connects to a previous task to extend learning of a mathematical concept.
In Grade 3, instructional time should focus on three critical areas:

1. **Developing an understanding of all operations with a focus on multiplication and division and strategies for multiplication and division within 100.**
   Students develop and refine their understanding of all operations to solve multistep problems and focus on the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations (e.g., Associative Property and Distributive Property) to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division. Students understand that a word problem can be represented with an equation based on the situation, but the solution may use a related equation that is easier to manipulate (e.g., a word problem may be represented with a situation equation such as $54 + ? = 78$; and students understand that even though the word problem is a joining situation, it is easier to solve using a subtraction equation $78 - 54 = ?$).

2. **Developing understanding of fractions, especially unit fractions (fractions with numerator of 1).**
   Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, $\frac{1}{2}$ of the paint in a small bucket could be less paint than $\frac{1}{3}$ of the paint in a larger bucket, but $\frac{1}{3}$ of a ribbon is longer than $\frac{1}{5}$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. **Developing understanding of the structure of rectangular arrays and of area.**
   Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.
The Dynamic Learning Maps and Essential Elements are knowledge and skills linked to the grade-level expectations identified in the Common Core State Standards. The purpose of the Dynamic Learning Maps Essential Elements is to build a bridge from the content in the Common Core State Standards to academic expectations for students with the most significant cognitive disabilities.

For more information please visit the Dynamic Learning Maps and Essential Elements website.
The term “growth mindset” comes from the groundbreaking work of Carol Dweck. She identified that everyone holds ideas about their own potential. Some people believe that their intelligence is more or less fixed in math—that you can do math or you can’t, while others believe they can learn anything and that their intelligence can grow.

In a fixed mindset, people believe their basic qualities, like their intelligence or talent, are simply fixed traits. They spend their time documenting their intelligence or talent instead of developing it. They also believe that talent alone creates success—without effort. Students with a fixed mindset are those who are more likely to give up easily.

In a growth mindset, people believe that their most basic abilities can be developed through dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment. Students with a growth mindset are those who keep going even when work is hard, and who are persistent.

It is possible to change mindsets and to shift students’ mindsets from fixed to growth and cause higher mathematics achievement and success in life. Watch this short video to get a better understanding of what Growth Mindset is and the benefits it can bring our students.

Operations and Algebraic Thinking (3.OA)
A. Represents and solves problems involving multiplication and division
   OA.1  OA.2  OA.3  OA.4
B. Understand properties of multiplication and the relationship between multiplication and division
   OA.5  OA.6
C. Multiply and divide within 100
   OA.7
D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.
   OA.8  OA.9

Number and Operations in Base Ten (3.NBT)
A. Use place value understanding and properties of operations to perform multi-digit arithmetic.
   NBT.1  NBT.2  NBT.3

Number and Operations – Fractions (3.NF)
A. Develop understanding of fractions as numbers.
   NF.1  NF.2  NF.3

Measurement and Data (3.MD)
A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
   MD.1  MD.2  MD.3
B. Represent and interpret data.
   MD.4  MD.5
C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
   MD.6  MD.7  MD.8
D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
   MD.9

Geometry (3.G)
A. Reason with shapes and their attributes
   G.1  G.2

Standards for Mathematical Practices
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Domain: Operations and Algebraic Thinking (OA)

Cluster A: Represent and solve problems involving multiplication and division.

Standard: 3.OA.1
Interpret products of whole numbers, (e.g. interpret $5 \cdot 7$ as the total number of objects in 5 groups of 7 objects each.) (3.OA.1)

Suggested Standards for Mathematical Practice (MP):

✓ MP.1 Make sense of problems and persevere in solving them.
✓ MP.2 Reason abstractly and quantitatively.
✓ MP.4 Model with mathematics.
✓ MP.6 Attend to precision.
✓ MP.7 Look for and make use of structure.

Connections: (3.OA.1 through 3.OA.4)
This cluster is connected to:

• Connect this domain with understanding properties of multiplication and the relationship between multiplication and division. (Grade 3.OA.5 through 3.OA.6)
• The use of a symbol for an unknown is foundational for letter variables in Grade 4 when representing problems using equations with a letter standing for the unknown quantity (Grade 4.OA.2 and OA.3).

Explanation and Examples:
The standard interprets products of whole numbers. Students need to recognize multiplication as a means of determining the total number of objects when there are a specific number of groups with the same number of objects in each group. Multiplication requires students to think in terms of groups of things rather than individual things. At this level, multiplication is seen as “groups of” and problems such as $5 \times 7$ refer to 5 groups of 7.

It is important for teachers to understand there are several ways in which to think of multiplication:

• Multiplication is often thought of as repeated addition of equal groups. While this definition works for some sets of numbers, it is not particularly intuitive or meaningful when we think of multiplying 3 by $\frac{1}{2}$ or 5 by -2. In such cases, it may be helpful to widen the idea of grouping to include evaluation of part of a group. This concept is related to partitioning (which, in turn, is related to division).

Example: Three groups of five students can be read as $3 \cdot 5$, or 15 students, while half a group of 10 stars can be represented as $\frac{1}{2} \cdot 10$, or 5 stars. These are examples of partitioning; each one of the three groups of five is part of the group of 15, and the group of 5 stars is part of the group of 10. Multiplication with fractions is NOT expected in 3rd grade but could arise in classroom discussions when working on multiplication.

• A second concept of multiplication is that of rate or price. Ex: If a car travels four hours at 50 miles per hour, then it travels a total of $4 \cdot 50$, or 200 miles; if CDs cost eight dollars each, then three CDs will cost $3 \cdot $8, or $24.
• A third concept of multiplication is that of **multiplicative comparison**. Ex: Sara has four CDs, Joanne has three times as many as Sara, and Sylvia has half as many as Sara. Thus, Joanne has $3 \cdot 4$, or 12 CDs, and Sylvia has $\frac{1}{2} \cdot 4$, or 2 CDs. Again, multiplication is not expected in 3rd grade but could arise in classroom discussions.

**Example for 3.OA.1:**
Jim purchased 5 packages of muffins. Each package contained 3 muffins. How many muffins did Jim purchase? 5 groups of 3 OR $5 \times 3 = 15$.

Describe another situation where there would be 5 groups of 3.

Students recognize multiplication as a means to determine the total number of objects when there are a specific number of groups with the same number of objects in each group. Multiplication requires students to think in terms of **groups of things** rather than individual things. Students learn that the multiplication symbol ‘$\times$’ means “**groups of**” and problems such as $5 \times 7$ refer to 5 **groups of** 7.

To further develop this understanding, students interpret a problem situation requiring multiplication using pictures, objects, words, numbers, and equations. Then, given a multiplication expression (e.g., $5 \times 6$) students interpret the expression using a multiplication context. (See Table 2 in Appendix) They should begin to use the terms, **factor** and **product**, as they describe multiplication. (MP6)

**Instructional Strategies:** (3.OA.1 through 3.OA.4)
In Grade 2, students found the total number of objects using rectangular arrays, such as a $5 \times 5$, and wrote equations to represent the sum. This strategy is foundational for multiplication because students should make a connection between repeated addition and multiplication.

Students need to experience problems involving equal groups (**whole unknown** or **size of group is unknown**) and multiplicative comparison (**unknown product**, **group size unknown** or **number of groups unknown**) as shown in Table 2 in the Appendix.

Student should be encouraged to solve these problems in different ways to show the same idea and be able to explain their thinking verbally and in written form. Allowing students to present several different strategies provides the opportunity for them to compare strategies.

Provide a variety of contexts and tasks so that students will have ample opportunity to develop and use thinking strategies to support and reinforce learning of basic multiplication and division facts.

Ask students to create multiplication problem situations in which they interpret the product of whole numbers as the total number of objects in a group. Ask them to write a number model or number sentence. Also, have students create division-problem situations in which they interpret the quotient of whole numbers as the number of shares.

Students can use **known** multiplication facts to determine the **unknown fact** in a multiplication or division problem. Have them write a multiplication or division equation and the related multiplication or division equation. For example, to determine the **unknown whole** number in $27 \div x = 3$, students should use knowledge of the **related multiplication fact** of $3 \times 9 = 27$. They should ask themselves questions such as, “How many 3s are in 27?” Have them justify their thinking with models or drawings.
**Resources/Tools:**
For detailed information see [Operations and Algebraic Thinking Learning Progressions](#).

Visit [K-5 Math Teaching Resources](#) click on **Number**, then on **3rd Grade**. Scroll down to 3.OA.1 to access resources specifically for this standard.

See [EngageNY Modules](#)

**“Barnyard Legs”, Georgia Department of Education.** Students solve multiplication problems using different strategies based on Amanda Bean’s Amazing Dream, A Mathematical Story by Cindy Neuschwander or a similar book about multiplication.

Georgia Department of Education
- **“Twenty-Four Kids All in a Row”**.

**NCTM Illuminations** – NCTM has many great resources available to educators, some of these resources (i.e. interactives) are open to any educator while others (i.e. lessons) require an individual or institutional membership. If you find that a resource referenced in the flip books requires membership access, check with your school/district to see if they have an institutional membership which would grant you access all NCTM documents. If they do not have a membership, this would be a valuable resource to request.
  - **“Exploring Equal Sets”** – This four-part lesson encourages students to explore models for multiplication, the inverse of multiplication, and representing multiplication facts in equation form.
  - **“All About Multiplication”**, In this four-lesson unit, students explore several meanings and representation of multiplications and learn about properties of operations for multiplication.

Sets of counters; Number lines to skip count and relate to multiplication

Common multiplication and division situations - See Appendix, [Table 2](#)

**Common Misconceptions:** (3.OA.1 through 3.OA.4)
Students can overgeneralize the commutative property and think that $3 ÷ 15 = 5$ and $15 ÷ 3 = 5$ are the same equations. The use of models is essential in helping students eliminate this misunderstanding.

Students often believe a symbol to represent a number once will represent the same quantity in the following problem. Presenting students with multiple situations in which they select a symbol and explain what it represents and then use the same symbol in another context will counter this misconception.
Domain: Operations and Algebraic Thinking (OA)

Cluster A: Represent and solve problems involving multiplication and division.

Standard: 3.OA.2
Interpret whole-number quotients of whole numbers, (e.g. interpret 56 ÷ 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.) (3.OA.2)

Suggested Standards for Mathematical Practice (MP):
- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

Connections: See 3.OA.1

Explanation and Examples:
This standard focuses on two distinct models of division: partition models and measurement (repeated subtraction) models.
- **Partition models** focus on the question, “How many in each group?” A context for partition models would be: There are 12 cookies on the counter. If you are sharing the cookies equally among three bags, how many cookies will go in each bag?
- **Measurement (repeated subtraction) models** focus on the question, “How many groups can you make?” A context or measurement models would be: There are 12 cookies on the counter. If you put 3 cookies in each bag, how many bags will you fill?

Students need to recognize the operation of division in two different types of situations. One situation requires determining how many groups and the other situation requires sharing (determining how many in each group). Students should be exposed to appropriate terminology (quotient, dividend, divisor, and factor). (MP6)

To develop this understanding, students interpret a problem situation requiring division using pictures, objects, words, numbers, and equations. Given a division expression (e.g., 24 ÷ 6) students interpret the expression in contexts that require both interpretations of division. (See Table 2 in Appendix)

**Instructional Strategies:** See 3.OA.1
Students can use known multiplication facts to determine the unknown fact in a multiplication or division problem. Have them write a multiplication or division equation and the related multiplication or division equation. For example, to determine the unknown whole number in $27 ÷ 3 = 3$, students should use knowledge of the related multiplication fact of $3 \times 9 = 27$. They should ask themselves questions such as, “How many 3s are in 27?” Have them justify their thinking with models or drawings.
Resources/Tools
Illustrative Mathematics tasks:
- 3.OA Fish Tanks
- 3.OA Markers in Boxes

Visit K-5 Math Teaching Resources click on Number, then on 3rd Grade. Scroll down to 3.OA.2 to access resources specifically for this standard.

Common Misconceptions: See 3.OA.1
It is easy to confuse the number of groups and the size of the groups in some division situations. When using money, students can easily become confused. It is important to emphasize that the size of the group is the number that is repeated. It is always the size of the group.

Example: You have $15. You want to make sure you have spending money for the next 3 weeks. How much money will you need to have for each week if you split this up equally?

The total is $15. The number of groups is 3 (to represent the 3 weeks). The quantity being solved for represents the size of each group. Each week will get the same number so that is the size of the group.

Graphic for representing multiplication or division thinking:

<table>
<thead>
<tr>
<th>Group(s)</th>
<th>Group Size</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Domain: Operations and Algebraic Thinking (OA)

Cluster A: Represent and solve problems involving multiplication and division.

Standard: 3.OA.3
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.) Refer to shaded section of Table 2 for specific situation types. (3.OA.3)

Suggested Standards for Mathematical Practice (MP):
- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

Connections: See 3.OA.1

Explanation and Examples:
This standard references various strategies that can be used to solve word problems involving multiplication & division. Students should apply their skills to solve word problems. Students should use a variety of representations for creating and solving two-step word problems, such as: If you divide 4 packs of 9 brownies among 6 people, how many brownies does each person receive? (4 x 9 = 36, 36 ÷ 6 = 6).

See the Appendix, Table 2, for examples of a variety of problem solving contexts, in which students need to find the product, the group size, or the number of groups. Students should be given ample experiences to explore and make sense of ALL the different problem structures.

Examples of Multiplication:
There are 24 desks in the classroom. If the teacher puts 6 desks in each row, how many rows are there? This task can be solved by drawing an array by putting 6 desks in each row. This is an array model.

This task can also be solved by drawing pictures of equal groups. 4 groups of 6 equals 24 objects

A student could also reason through the problem mentally or verbally, “I know 6 and 6 are 12. 12 and 12 are 24. Therefore, there are 4 groups of 6 giving a total of 24 desks in the classroom.”
A number line could also be used to show jumps of equal distance.

Students in third grade should use a variety of pictures and symbols to represent unknown numbers (variables). Letters are also introduced to represent unknowns in third grade.

Students use a variety of representations for creating and solving one-step word problems, i.e., numbers, words, pictures, physical objects, or equations. They use multiplication and division of whole numbers up to 10 x 10. Students need to explain their thinking, show their work by using at least one representation, and verify that their answer is reasonable.

Word problems may be represented in multiple ways:

- Equations: \(3 \times 4 = ?, \ 4 \times 3 = ?, \ ? \div 4 = 3, \ ? \div 3 = 4, \ ? = 3 \times 4, \ ? = 4 \times 3, \ 4 = ? \div 3, \ 3 = ? \div 4\)
- Array:
  
  ```
  0 0 0 0
  0 0 0 0
  0 0 0 0
  ```
- Equal groups
- Repeated addition: \(4 + 4 + 4\) (or repeated subtraction for division)
- Equal jumps (distances) from 0 on the number line: 3 equal jumps to 12 or three equal jumps backwards from 12 to 0

*** As the teacher, one of the KEY understandings of multiplicative reasoning you want to develop in your students is that multiplication extends beyond repeated addition. If students do not move from additive to multiplicative thinking then their development in understanding higher mathematics will be compromised. Students should understand that there is a multiplicative unit and a scaling factor in the following mathematical expression – \(3 \times 5\). 5 is the multiplicative unit (multiplicand) and 3 is the scaling factor (multiplier) for that multiplicative unit. Essentially the expression is telling you that there are “3 groups of 5” or “3 copies of the 5”.

Examples of Division Situations:

Determining the number of objects in each share (partitive division, where the size of the groups is unknown):
There are 24 students at recess. The teacher wants to divide the class into 4 lines. Write a division equation for this story and determine how students will be in each line. \(24 \div 4 = n\). The total is known – 24 students. The number of groups is known – 4 lines. The size of the groups is unknown – how many students in each line?

Determining the number of shares (measurement division, where the number of groups is unknown):
There are 24 students at recess. The teacher wants to divide the class into lines with 6 students in each line. Write a division equation for this story and determine how many lines the teacher will need. \(24 \div 6 = n\). The total is known – 24 students. The size of the groups is known – 6 students in each line. The number of groups is unknown – how many lines.
Division situation with the total unknown:
There are some students at recess. The teacher wants to divide the students so that she has 4 lines with 6 students in each line. Write a division equation for this story and determine how many students the teacher will need. \( n \div 4 = 6 \) OR \( n \div 6 = 4 \). The number of groups is known – 4 lines. The size of the groups is known – 6 students in each line. The total is unknown – how many students? The situation is division but it is easier to solve using a multiplication equation. So the solution equation can be written as \( 6 \times 4 = ? \)

Examples of division problems using diagrams or pictures:
- Determining the number of objects in each share (partitive division, where the size of the groups is unknown):
  - The bag has 92 hair clips, and Laura and her three friends want to share them equally. How many hair clips will each person receive?

- Determining the number of shares (measurement division, where the number of groups is unknown)
  - Max the monkey loves bananas. Molly, his trainer, has 24 bananas. If she gives Max 4 bananas each day, how many days will the bananas last?

Solution: The bananas will last for 6 days.

Multiplication and Division organizational tool:
Instructional Strategies: See 3.OA.1
Tools/Resources:
Illustrative Mathematics tasks:
3.OA Two Interpretations of Division
3.OA Analyzing Word Problems Involving Multiplication
3.OA Gifts from Grandma, Variation 1
3.OA, MD, NBT Classroom Supplies

Visit K-5 Math Teaching Resources click on Number, then on 3rd Grade. Scroll down to 3.OA.3 to access resources specifically for this standard.

Thinking Blocks on Math Playground allows students several ways to model problems.

Greg Tang’s Word Problem Generator – allows you to select all the various situation subtypes.
For detailed information see: Learning Progressions- Operations and Algebraic Thinking K-5

Common Misconceptions: See 3.OA.1
Domain: Operations and Algebraic Thinking (OA)

Cluster A: Represent and solve problems involving multiplication and division.

Standard: 3.OA.4

Determine the unknown whole number in a multiplication or division equation by using related equations. For example, determine the unknown number that makes the equation true in each of the equations $8 \cdot ? = 48; \ 5 = \_ \div 3; \ 6 \times 6 = \_$(3.OA.4)

Suggested Standards for Mathematical Practice (MP):

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

Connections: See 3.OA.1

Explanation and Examples:

This standard refers to Table 2 in the Appendix of this document and equations for the different types of multiplication and division problem structures. The easiest problem structure includes Unknown Product ($3 \times 6 = ?$ or $18 \div 3 = 6$). The more difficult problem structures include Group Size Unknown ($3 \times ? = 18$ or $18 \div 3 = 6$) or Number of Groups Unknown ($? \times 6 = 18$, $18 \div 6 = 3$).

The focus of 3.OA.4 goes beyond the traditional notion of fact families, by having students explore the inverse relationship of multiplication and division. Related equations allow students to see both composition and decomposition equations.

Students apply their understanding of the meaning of the equal sign as “the same value as” to interpret an equation with an unknown. When given $4 \times n = 40$, they might think:

- 4 groups of what size of each group is the same as 40 OR 4 groups of some number is the same as 40

Students apply their understanding of the meaning of the equal sign as “the same value as” to interpret an equation with an unknown. When given $4 \times n = 40$, they might think:

- 4 groups of some number is the same as 40
- I know that 4 groups of 10 is 40 so the unknown number is 10
- The missing factor is 10 because 4 times 10 equals 40.

Equations in the form of $a \times b = c$ and $c = a \times b$ should be used interchangeably, with the unknown in different positions.

Example:
Solve the equations below:

\[24 = ? \times 6\]

I have 24 total. If I have 6 groups, how many items should be in each of my groups? OR I have 24 total. If I have 6 items in each group, how many groups will I have?

\[72 \div \square = 9\]

I have 72 total. What multiplied by 9 gives me a result of 72?

Melisa has 3 bags. There are 4 marbles in each bag. How many marbles does Melisa have altogether? \[3 \times 4 = m\]

This standard is strongly connected to 3.OA.3 when students solve problems and determine unknowns in equations.

Students should experience creating story problems for given equations. When crafting story problems, they should carefully consider the question(s) to be asked and answered to write an appropriate equation. Students may approach the same story problem differently and write either a multiplication equation or division equation. Use Table 2 in the Appendix to help students understand situation equations. The situation equation should mirror what is happening in the problem.

**Instructional Strategies:** See 3.OA.1

**Resources/Tools:**

*Illustrative Mathematics* tasks:

- 3.OA Finding the unknown in a division equation

Visit K-5 Math Teaching Resources click on Number, then on 3rd Grade. Scroll down to 3.OA.4 to access resources specifically for this standard.

*Thinking Blocks* on Math Playground allows students several ways to model problems.

**Common Misconceptions:** See 3.OA.1 & 3.OA.2
Domain: Operations and Algebraic Thinking (OA)

- **Cluster B:** *Understand properties of multiplication and the relationship between multiplication and division.*

**Standard: 3.OA.5**
Apply properties of operations as strategies to multiply and divide. *Examples: If 6 \cdot 4 = 24 is known, then 4 \cdot 6 = 24 is also known. (Commutative property of multiplication.)* 3 \cdot 5 \cdot 2 can be found by 3 \cdot 5 = 15, then 15 \cdot 2 = 30, or by 5 \cdot 2 = 10, then 3 \cdot 10 = 30. (Associative property of multiplication.) Knowing that 8 \cdot 5 = 40 and 8 \cdot 2 = 16, one can find 8 \cdot 7 as 8 \cdot (5 + 2) = (8 \cdot 5) + (8 \cdot 2) = 40 + 16 = 56. (Distributive property.) Students need not use formal terms for these properties. *(3.OA.5)*

**Suggested Standards for Mathematical Practice (MP):**
- ✓ MP.1 Make sense of problems and persevere in solving them.
- ✓ MP.4 Model with mathematics.
- ✓ MP.7 Look for and make use of structure.
- ✓ MP.6 Attend to precision.
- ✓ MP.8 Look for and express regularity in repeated reasoning.

**Connections:** *(3.OA.5 through 3.OA.6)*
This cluster is connected to:
- Third grade 3.OA.A *(Represent and solve problems involving multiplication and division).*
- Second grade 2.OA.C *(Work with equal groups of objects to gain foundations for multiplication)* and 2.G.2 *(Partition a rectangle into rows and columns of same-size squares and count to find the total number of them).*

**Explanation and Examples:**
This standard references properties of multiplication. While students **DO NOT** need to use the formal terms of these properties, students should understand that properties are rules about how numbers work. Teachers should use the correct terminology when possible.

Students need to be flexible and fluent when applying each of the properties. Students represent expressions using various objects, pictures, words and symbols in order to develop their understanding of properties. They multiply by 1 and 0 and divide by 1. They change the order of numbers to determine that the order of numbers does not make a difference in multiplication (**but does make a difference in division**). Given three factors, they investigate how changing the order of how they multiply the numbers does not change the product. They also decompose numbers to build fluency with multiplication.

The *commutative property* (order property) states that the order of numbers does not matter when adding or multiplying numbers. For example, if a student knows that 5 \times 4 = 20, then they also know that 4 \times 5 = 20.
The array below could be described as a 5 x 4 array for 5 columns and 4 rows, or a 4 x 5 array for 4 rows and 5 columns. **There is no “fixed” way to write the dimensions of an array as rows x columns or columns x rows.** Students should have flexibility in being able to describe both dimensions of an array.

\[
\begin{array}{cc}
\text{X X X X} & \text{X X X X}
\end{array}
\]

\[
\begin{array}{cc}
\text{X X X X} & \text{4 x 5}
\end{array}
\]

\[
\begin{array}{cc}
\text{X X X X} & \text{or}
\end{array}
\]

\[
\begin{array}{cc}
\text{X X X X} & \text{5 x 4}
\end{array}
\]

\[
\text{X X X X}
\]

The **associative property** states that the sum or product stays the same when the grouping of addends or factors is changed. For example, when a student multiplies 7 x 5 x 2, a student could rearrange the numbers to first multiply 5 x 2 = 10 and then multiply 10 x 7 = 70.

Students should be introduced to the **distributive property** of multiplication over addition as a strategy for using products they know to solve products they don’t know. Students use mental math to determine a product.

Here are some examples of how students could use the distributive property to find the product of 7 x 6. Again, students should use the distributive property, but can refer to this method using informal language such as “breaking numbers apart”.

**Example:**
Students determine the products and factors of problems by breaking numbers apart. For example, for the problem 6 x 7 = ?, students can decompose the 7 into a 5 and 2, and reach the answer by multiplying 6 x 5 = 30 and 6 x 2 = 12 and adding the two products (30+12=42).

![Diagram of 7 x 6 array with distributive property example]

6 x 7 = ?

6 x 5 = 30

6 x 2 = 12

30 + 12 = 42
Mental Math Examples:
Here are ways that students could use the distributive property to determine the product of 7 x 6. Again, students should use the distributive property, but can refer to this in informal language such as “breaking numbers apart”.

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 x 6</td>
<td>7 x 6</td>
<td>7 x 6</td>
</tr>
<tr>
<td>7 x 5 = 35</td>
<td>7 x 3 = 21</td>
<td>5 x 6 = 30</td>
</tr>
<tr>
<td>7 x 1 = 7</td>
<td>7 x 3 = 21</td>
<td>2 x 6 = 12</td>
</tr>
<tr>
<td>35 + 7 = 42</td>
<td>21 + 21 = 42</td>
<td>30 + 12 = 42</td>
</tr>
</tbody>
</table>

To further develop understanding of properties related to multiplication and division, students use different representations and their understanding of the relationship between multiplication and division to determine if the following types of equations are true or false.

- $0 \times 7 = 7 \times 0 = 0$ (Zero Property of Multiplication)
- $1 \times 9 = 9 \times 1 = 9$ (Multiplicative Identity Property of 1)
- $3 \times 6 = 6 \times 3$ (Commutative Property)
- $8 \div 2 \neq 2 \div 8$ (Students are only to determine that these are not equal)
- $2 \times 3 \times 5 = 6 \times 5$
- $10 \times 2 < 5 \times 2 \times 2$
- $2 \times 3 \times 5 = 10 \times 3$
- $1 \times 6 > 3 \times 0 \times 2$

Students represent equations and inequalities using various objects, pictures, words and symbols in order to develop their understanding of properties. They multiply by 1 and 0 and divide by 1, never by 0. They change the order of numbers to determine that the order of numbers does not make a difference in multiplication (but does make a difference in division).

Given three factors, they investigate changing the order of how they multiply the numbers to determine that changing the order does not change the product. They also decompose numbers to build fluency with multiplication.

Use models to help build understanding of the commutative property:

**Example:** $3 \times 6 = 6 \times 3$

In the following diagram it may not be obvious that 3 groups of 6 is the same as 6 groups of 3. A student may need to count to verify this.

\[
\begin{array}{c}
\bullet \bullet \bullet \bullet \\
\bullet \bullet \bullet \bullet \\
\end{array}
\text{is the same quantity as}
\begin{array}{c}
\bullet \bullet \bullet \bullet \\
\end{array}
\]
Different representation:
An array explicitly demonstrates the concept of the commutative property. The array just needs to be rotated.

Students are introduced to the **distributive property of multiplication over addition** as a strategy for using products they know to solve products they don’t know. For example, if students are asked to find the product of \( 7 \times 8 \), they might decompose 7 into 5 and 2 and then multiply \( 5 \times 8 \) and \( 2 \times 8 \) to arrive at \( 40 + 16 \) or 56.

Students should learn that they can decompose either of the factors. It is important to note that the students may record their thinking in different ways.

**Decomposing the 7:**

\[
\begin{align*}
5 \times 8 &= 40 \\
2 \times 8 &= \underline{16} \\
\text{total} &= \underline{56}
\end{align*}
\]

**Decomposing the 8:**

\[
\begin{align*}
7 \times 4 &= 28 \\
7 \times 4 &= \underline{28} \\
\text{total} &= \underline{56}
\end{align*}
\]

**Instructional Strategies: (3.OA.5 through 3.OA.6)**

Students need to apply properties of operations (commutative, associative and distributive) as strategies to multiply and divide. Applying the concept involved is more important than students knowing the name of the property.

Understanding the commutative property of multiplication is developed through the use of models as basic multiplication facts are learned. For example, the result of multiplying \( 3 \times 5 \) (15) is the same as the result of multiplying \( 5 \times 3 \) (15).

Splitting arrays can help students understand the distributive property. They can use a known fact to learn other facts that may cause difficulty. (See example above where students split an array into smaller arrays and add the sums of the groups.)

Students’ understanding of the part/whole relationships is critical in understanding the connection between multiplication and division.
Resources/Tools

**NCTM Illuminations** – NCTM has many great resources available to educators, some of these resources (i.e. interactives) are open to any educator while others (i.e. lessons) require an individual or institutional membership. If you find that a resource referenced in the flip books requires membership access, check with your school/district to see if they have an institutional membership which would grant you access all NCTM documents. If they do not have a membership, this would be a valuable resource to request.

- **“Multiplication--It’s In the Cards”** – Students skip-count and examine multiplication patterns. They also explore the commutative property of multiplication.
- **“Multiplication--It’s In the Cards: Looking for Calculator Patterns”** – Students use a web-based calculator to create and compare counting patterns using the constant function feature of the calculator. Making connections between multiple representations of counting patterns reinforces students understanding of this important idea and helps them recall these patterns as multiplication facts. From a chart, students notice that multiplication is commutative.

**Illustrative Mathematics** tasks:
- [3.OA Valid Equalities? (Part 2)]

Visit [K-5 Math Teaching Resources](http://example.com) click on **Number**, then on **3rd Grade**. Scroll down to **3.OA.5** to access resources specifically for this standard.

**Thinking Blocks** on Math Playground allows students several ways to model problems.

Access the [Multiplication Fact Strategies](http://example.com) book from the KSDE Mathematics website for lessons, activities, and games that center on using the properties of operations to build fact fluency:

### Common Misconceptions:
Students may experience difficulty in determining which factor represents rows or the number of objects in a group, and which factor represents the number of groups or columns. In division there are two different situations that can cause confusion depending on which factor is the unknown— the number in the group (size of the group) or the number of groups.

Students will often believe that these properties hold true for division. They must be provided opportunities to see how this is not true. Telling students is not enough. They must experience problems that challenge their beliefs and come to their own conclusions.
Domain: Operations and Algebraic Thinking (OA)

► **Cluster B: Understand properties of multiplication and the relationship between multiplication and division.**

**Standard: 3.OA.6**
Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.* *(3.OA.6)*

**Suggested Standards for Mathematical Practice (MP):**
- MP.1 Make sense of problems and persevere in solving them.
- MP.7 Look for and make use of structure.

**Connections:** See 3.OA.5

**Explanation and Examples:**
This standard refers to some of the situations in Table 2 (see Appendix). Since multiplication and division are inverse operations, students are expected to solve problems and explain their processes of solving division problems that can also be represented as unknown factor in multiplication problems.

**Example:**
A student knows that 2 x 9 = 18. How can they use that fact to determine the answer to the following question: 18 people are divided into pairs in P.E. class? How many pairs are there? Write a division equation and explain your reasoning.

Multiplication and division are inverse operations and that understanding can be used to find the unknown. Fact triangles demonstrate the inverse operations of multiplication and division by showing the two factors and how those factors relate to the product and/or quotient.

**Example:**
- 3 x 5 = 15  5 x 3 = 15
- 15 ÷ 3 = 5  15 ÷ 5 = 3
- 15 = 3 x 5  15 = 5 x 3
- 5 = 15 ÷ 3  3 = 15 ÷ 5

Students use their understanding of the meaning of the equal sign as “the same value as” to interpret an equation with an unknown. When given 32 ÷ □ = 4, students may think:
- 4 groups of some number is the same as 32.
- I know that 4 groups of 8 is 32 so the unknown number is 8.
- The missing factor is 8 because 4 times 8 is 32.

Equations in the form of a ÷ b = c and c = a ÷ b need to be used interchangeably, with the unknown in different positions.
Instructional Strategies:  See 3.OA.5

Common Misconceptions:  See 3.OA.5
Domain: Operations and Algebraic Thinking (OA)

Cluster C: Multiply and divide within 100 (basic facts up to 10 x 10).

Standard: 3.OA.7
Fluently (efficiently, accurately, and flexibly) multiply and divide with single digit multiplications and related divisions using strategies (e.g. relationship between multiplication and division, doubles, double and double again, half and then double, etc.) or properties of operations. (3.OA.7)

Suggested Standards for Mathematical Practice (MP):
- MP.2 Reason abstractly and quantitatively.
- MP.7 Look for and make use of structure.
- MP.8 Look for and express regularity in repeated reasoning.

Connections:
This cluster is connected to:
- Third Grade 3.OA.A (Developing understanding of multiplication and division and strategies for multiplication and division within 100) and 3.OA.B (Understand properties of multiplication and the relationship between multiplication and division).

Explanation and Examples:
This standard uses the word fluently, which means accuracy, efficiency (using a reasonable amount of steps and time), and flexibility (using strategies such as the distributive property). “Know from memory” does not mean focusing only on timed tests and repetitive practice, but ample experiences working with manipulatives, pictures, arrays, word problems, and numbers to internalize the basic facts (up to 9 x 9). Strategies using decomposition and the properties of multiplication will lead to fluency and better retention of facts over time.

By studying patterns and relationships in multiplication facts and relating multiplication and division, students build a foundation for fluency with multiplication and division facts. Students demonstrate fluency with multiplication facts through 10 and the related division facts. Multiplying and dividing fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.

Strategies students may use to attain fluency include:
- Multiplication by zeroes and ones
- Doubles (2s facts)
- Double and Double Again (4s)
- Doubling three times (8s)
- Tens facts (relating to place value, 5 x 10 is 5 tens or 50)
- Five facts (half of tens or connect to the analog clock)
- Skip counting (counting groups of __ and knowing how many groups have been counted)
- Square numbers (the physical and visual representation of these facts makes a square - ex: 3 x 3)
- Nines (10 groups less 1 group; e.g., 9 x 3 is 10 groups of 3 minus 1 group of 3 so 30 – 3 = 27)
- Decomposing into known facts (6 x 7 is a double - 6 x 6 - plus one more group of 6)
- Turn-around facts (Commutative Property)
• Related Equations also known as fact families (Ex: 6 x 4 = 24; 24 ÷ 6 = 4; 24 ÷ 4 = 6; 4 x 6 = 24; 24 = 6 x 4; 24 = 4 x 6; 6 = 24 ÷ 4; 4 = 24 ÷ 6)

General Note: Students should have exposure to multiplication and division problems presented in both \textbf{vertical} and \textbf{horizontal} forms. (Problems presented \textit{horizontally} encourages mental computation.)

\textbf{Instructional Strategies:}

Students need to understand the part/whole relationships in order to understand the connection between multiplication and division. They need to develop efficient strategies that lead to the big ideas of multiplication and division.

• These big ideas include understanding the \textbf{properties of operations}, such as the \textit{commutative} and \textit{associative properties of multiplication} and the \textit{distributive property}. The \textit{naming of the property is not necessary} at this stage of learning.

• In Grade 2, students found the total number of objects using rectangular arrays, such as a 5 x 5, and wrote equations to represent the sum. \textbf{This is called unitizing}. It requires students to count groups, not just objects. They see the whole as a number of groups of a number of objects. This strategy is a foundation for multiplication helping students make a connection between repeated addition and multiplication.

As students create arrays for multiplication using objects or drawing on graph paper, they should discover that three groups of four and four groups of three yield the same results. They should observe that the arrays contain the same total number of squares but the orientation of the array has just rotated so the rows and columns are switched. Provide numerous situations for students to develop this understanding. (\textit{Commutative property})

\begin{center}
\begin{tabular}{|c|c|c|c|c|c|}
\hline
& & & & & \\
\hline
& & & & & \\
\hline
& & & & & \\
\hline
\end{tabular}
\end{center}

To develop an understanding of the \textit{distributive property}, students need to decompose the whole into groups. Arrays are valuable tools and should be used to develop this understanding. To find the product of 3 × 9, students can decompose 9 into the sum of 4 and 5 and find 3 × (4 + 5).

\begin{center}
\begin{tabular}{|c|c|c|c|c|c|}
\hline
& & & & & \\
\hline
& & & & & \\
\hline
& & & & & \\
\hline
\end{tabular}
\end{center}

The \textit{distributive property} is the basis for the standard multiplication algorithm that students will use to fluently multiply multi-digit whole numbers in Grade 5.
Once students have an understanding of multiplication using efficient strategies, they should make the connection to division.

Using various strategies to solve different contextual problems that use the same two one-digit whole numbers requiring multiplication allows for students to commit to memory all products of two one-digit numbers.
Resources/Tools:
- Unifix cubes
- Grid or graph paper
- Sets of counters

See: [K-5 Operations and Algebraic Thinking and Counting and Cardinality](#) for detailed information.

Georgia Department of Education:
- “A Giraffe Named Stretch” - Students create and solve multiplication stories about Stretch (a giraffe) and his children using a list of facts given to them.
- “Making Sense of Division” - Students demonstrate how to use division as an application of money. Students observe what happens when an amount of money is divided evenly among a group of people or not divided evenly among a group of people.

Access the [Multiplication Fact Strategies](#) book from the KSDE Mathematics website for lessons, activities, and games that center on using the properties of operations to build fact fluency:

**NCTM Illuminations** – NCTM has many great resources available to educators, some of these resources (i.e. interactives) are open to any educator while others (i.e. lessons) require an individual or institutional membership. If you find that a resource referenced in the flip books requires membership access, check with your school/district to see if they have an institutional membership which would grant you access all NCTM documents. If they do not have a membership, this would be a valuable resource to request.

- [Multiplication: It’s in the Cards](#) (view of some of the lessons)

**Common Misconceptions:**
Student who struggle most likely do not have fluency for the easy numbers. The child does not understand an unknown factor (a divisor) can be found from the related multiplication. It is not a matter of instilling facts divorced from their meaning, but rather the outcome of carefully designed learning. That involves the interplay of practice and reasoning.
Cluster D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Standard: 3.OA.8
Solve two-step word problems using any of the four operations. Represent these problems using both situation equations and/or solution equations with a letter or symbol standing for the unknown quantity (refer to Table 1 and Table 2 and standard 3.OA.3). Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers. (3.OA.8)

Suggested Standards for Mathematical Practice (MP):
✓ MP.1 Make sense of problems and persevere in solving them.
✓ MP.2 Reason abstractly and quantitatively.
✓ MP.4 Model with mathematics.
✓ MP.5 Use appropriate tools strategically.
✓ MP.7 Look for and make use of structure.
✓ MP.8 Look for and express regularity in repeated reasoning.

Connections:
This cluster is connected to:
- Represent and solve problems involving multiplication and division. 3.OA.A
- Use place value understanding and properties of operations to perform multi-digit arithmetic. 3.NBT.A

Explanation and Examples:
This standard refers to two-step word problems using the four operations. The size of the numbers should be limited to 3rd grade standards (e.g., 3.OA.7 and 3.NBT.2). Adding and subtracting numbers should include numbers within 1000, and multiplying and dividing numbers should include single-digit factors and products less than 100.

This standard also expects students to represent problems using equations with a letter to represent unknown quantities.

Example:
Mike runs 2 miles a day. His goal is to run 25 miles. After 5 days, how many miles does Mike have left to run in order to meet his goal? Write an equation to show this problem situation. (25 = 2 x 5 + m).
This standard refers to estimation strategies, including rounding which would expect the use of compatible numbers (numbers that sum to 10, 50, or 100). The focus in this standard is to have students use and discuss various strategies. Students should estimate during problem solving, and then revisit their estimate to check for reasonableness.

Example:
Here are some typical estimation strategies for the following problem:

On a vacation, your family travels 267 miles on the first day, 194 miles on the second day and 34 miles on the third day. About how many total miles did they travel?

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I first thought about 267 and 34. I noticed that their sum is about 300. Then I knew that 194 is close to 200. When I put 300 and 200 together, I get 500.</td>
<td>I first thought about 194. It is really close to 200. I also have 2 hundreds in 267. That gives me a total of 4 hundreds. Then I have 67 in 267 and the 34. When I put 67 and 34 together that is really close to 100. When I add that hundred to the 4 hundreds that I already had, I end up with 500.</td>
<td>I rounded 267 to 300. I rounded 194 to 200. I rounded 34 to 30. When I added 300, 200 and 30, I know my answer will be about 530.</td>
</tr>
</tbody>
</table>

When assessing estimation strategies you could have more than one reasonable answer (500 or 530), or students could provide a range (between 500 and 550). Problems should be structured so that all acceptable estimation strategies will arrive at a reasonable answer. Students should be expected to explain their thinking in arriving at their estimation.

Student should use various estimation skills solve word problems. They should include:
- identifying when estimation is appropriate
- determining the level of accuracy needed
- selecting the appropriate method of estimation
- verifying solutions or determining the reasonableness of solutions.

Estimation strategies include, but are not limited to:
- using benchmark numbers that are easy to compute
- front-end estimation with adjusting:
  1. (using the highest place value and estimating from the front end making adjustments to the estimate by taking into account the remaining amounts)
  2. rounding and adjusting (students round down or round up and then adjust their estimate depending on how much the rounding changed the original values)

Problem Solving without Estimation
It is important that students be exposed to multiple problem-solving strategies (using any combination of words, numbers, diagrams, physical objects or symbols) and be able to choose which ones to use.
Examples:

- Jerry earned 231 points at school last week. This week he earned 79 points. If he uses 60 points to earn free time on a computer, how many points will he have left?

A student may use the number line above to describe his/her thinking, “231 + 9 = 240 so now I need to add 70 more. 240, 250 (10 more), 260 (20 more), 270, 280, 290, 300, 310 (70 more). Now I need to count back 60. 310, 300 (back 10), 290 (back 20), 280, 270, 260, 250 (back 60).”

A student writes the equation, $231 + 79 - 60 = m$ and uses rounding $(230 + 80 - 60)$ to estimate.

A student writes the equation, $231 + 79 - 60 = m$ and calculates $79 - 60 = 19$ and then calculates $231 + 19 = m$.

The soccer club is going on a trip to the water park. The cost of attending the trip is $63. Included in that price is $13 for lunch and the cost of 2 wristbands, one for the morning and one for the afternoon. Write an equation representing the cost of the field trip and determine the price of one wristband.

The above diagram helps the student write the equation, $w + w + 13 = 63$. Using the diagram, a student might think, “I know that the two wristbands cost $50 ($63 - $13) so one wristband costs $25.” To check for reasonableness, a student might use front end estimation and say $60 - 10 = 50$ and $50 ÷ 2 = 25$.

Instructional Strategies: (3.OA.8 through 3.OA.9)

Students gain a full understanding of which operation to use in any given situation through contextual problems. Number skills and concepts are developed as students solve problems. Problems should be presented on a regular basis as students work with numbers and computations.

When students think about the situation of the problem and write an equation to fit the situation, then they can use their understanding of how operations work to create an equation that will be easier to use to solve the problem. Here is a simple example: I had 24 cookies. My friend gave me some more cookies so now I have 36. How many did my friend give me? To tell students to subtract can be confusing to them because this is definitely a joining situation. But if students write the equation $24 + n = 36$, then they can think about the relationship between addition and subtraction to create a related equation (solution equation) in order to find the solution. $36 - 24 = n$.

Researchers and mathematics educators advise against providing “key words” for students to look for in problem situations because they can be misleading and if key words are helpful they only provide a clue to one of the steps in the problem. This is not helpful now that students are expected to solve multistep problems. Students should use various strategies to solve problems. Students should analyze the structure of the problem to make sense of it. They should think through the problem and the meaning of the answer before attempting to solve it.
Encourage students to represent the problem situation with a drawing or with counters/blocks. Students should determine the reasonableness of the solution to all problems using mental computations and estimation strategies.

Students can use base–ten blocks on centimeter grid paper to construct rectangular arrays to represent problems.

Students should use arithmetic patterns and explain the patterns using properties of operations. They can explore patterns by determining likenesses, differences and changes. Use patterns in addition and multiplication tables.

**Resources/Tools:**

**NCTM Illuminations** – NCTM has many great resources available to educators, some of these resources (i.e. interactives) are open to any educator while others (i.e. lessons) require an individual or institutional membership. If you find that a resource referenced in the flip books requires membership access, check with your school/district to see if they have an institutional membership which would grant you access all NCTM documents. If they do not have a membership, this would be a valuable resource to request.

- **“Multiplication--It’s In the Cards”** – Students skip-count and examine multiplication patterns. They also explore the commutative property of multiplication.
- **“Multiplication--It’s In the Cards: Looking for Calculator Patterns”** – Students use a web-based calculator to create and compare counting patterns using the constant function feature of the calculator. Making connections between multiple representations of counting patterns reinforces students’ understanding of this important idea and helps them recall these patterns as multiplication facts. From a chart, students notice that multiplication is commutative.

**Illustrative Mathematics** tasks:

- **3.OA The Stamp Collection**
- **3.OA The Class Trip**

Visit **K-5 Math Teaching Resources** click on **Number**, then on **3rd Grade**. Scroll down to 3.OA.8 to access resources specifically for this standard.

**Thinking Blocks** on Math Playground allows students several ways to model problems.

**Common Misconceptions:**

Students frequently learn computation strategies without understanding the benefit of estimation. Estimation assists in determining if answers are reasonable are not. You may decide to work on estimation before tackling specific strategies for computation. Talk about the reasonableness of answers and have the students defend their estimations.

If students are not allowed to think about the situation of the problems then they begin to believe that math doesn’t make sense. If the problem is a joining situation but you tell the students to subtract without making the connection to the relationship between the operations, then this will lead to confusion and misconceptions that are hard to overcome.
Domain: Operations and Algebraic Thinking (OA)

Cluster D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Standard: 3.OA.9

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations (See Table 5). 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. (3.OA.9)

Suggested Standards for Mathematical Practice (MP):

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

Connections: See 3.OA.8

Explanation and Examples:

This standard calls for students to examine arithmetic patterns involving both addition and multiplication.

Arithmetic patterns are patterns that change by the same rate, such as adding the same number. For example, the series 2, 4, 6, 8, 10 is an arithmetic pattern that increases by 2 between each term.

This standard also mentions identifying patterns related to the properties of operations.

Examples:

- Even numbers are always divisible by 2. Even numbers can always be decomposed into 2 equal addends (14 = 7 + 7).
- Multiples of even numbers (2, 4, 6, and 8) are always even numbers.
- On a multiplication chart, the products in each row and column increase by the same amount (skip counting).
- On an addition chart, the sums in each row and column increase by the same amount.
- Using a multiplication table, highlight a row of numbers and ask students what they notice about the highlighted numbers.

Explain a pattern using properties of operations.

When (commutative property) one changes the order of the factors they will still get the same product, example 6 \( \times \) 5 = 30 and 5 \( \times \) 6 = 30.

Teacher: What pattern do you notice when 2, 4, 6, 8, or 10 are multiplied by any number (even or odd)?

Student: The product will always be an even number.

Teacher: Why?
In an addition table ask what patterns they notice. Explain why the pattern works this way?

Students need ample opportunities to observe and identify important numerical patterns related to operations. They should build on their previous experiences with properties related to addition and subtraction. Students investigate addition and multiplication tables in search of patterns and explain why these patterns make sense mathematically. (MPs 7&8).

All of the understandings of multiplication and division situations, of the levels of representation and solving, and of patterns need to culminate by the end of Grade 3 in fluent multiplying and dividing of all single digit numbers and 10.

It should be clear, this does not mean instilling facts divorced from their meanings, but rather the outcome of a carefully designed learning process that heavily involved the interplay of PRACTICE and REASONING. (Learning Progressions- Operations and Algebraic Thinking K-5).

Examples:
- Any sum of two even numbers is even.
- Any sum of two odd numbers is even.
- Any sum of an even number and an odd number is odd.
- The multiples of 4, 6, 8, and 10 are all even because they can all be decomposed into two equal groups.
- The doubles (2 addends the same) in an addition table fall on a diagonal while the doubles (multiples of 2) in a multiplication table fall on horizontal and vertical lines.
- The multiples of any number fall on a horizontal and a vertical line due to the commutative property.
- All the multiples of 5 end in a 0 or 5 while all the multiples of 10 end with 0. Every other multiple of 5 is a multiple of 10.

Students also investigate a hundreds chart in search of addition and subtraction patterns. They record and organize all the different possible sums of a number and explain why the pattern makes sense.

<table>
<thead>
<tr>
<th>Addend</th>
<th>Addend</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>
**Instructional Strategies:** See 3.OA.8

**Resources/Tools:**
*Illustrative Mathematics* tasks:
- 3.OA Addition Patterns
- 3.OA Patterns in the multiplication table
- 3.OA Symmetry of the addition table
- 3.OA Making a ten

Visit [K-5 Math Teaching Resources](https://www.math-aids.com) click on **Number**, then on **3rd Grade**. Scroll down to 3.OA.9 to access resources specifically for this standard.

**Common Misconceptions:**
The student is not able to follow the conventions of order of operations. They randomly attack pairs of numbers without regard for what the associative and distributive properties require. They do not look for and make use of structure (MP7) or they do not follow the “rules of the road”.
Domain: Number and Operations in Base Ten (NBT)

Cluster A: *Use place value understanding and properties of operations to perform multi-digit arithmetic.*

Standard: 3.NBT.1

Use place value understanding to round whole numbers to the nearest 10 or 100. (*3.NBT.1*)

Suggested Standards for Mathematical Practice (MP):
- MP.5 Use appropriate tools strategically.
- MP.7 Look for and make use of structure.
- MP.8 Look for and express regularity in repeated reasoning.

Connections: (3.NBT.1 through 3.NBT.3)

This cluster is connected to:
- The content in this cluster goes beyond the critical areas to address solving multi-step problems.
- The rounding strategies developed in third grade will be expanded in grade four with larger numbers.
- Additionally, students will formalize the rules for rounding numbers with the expansion of numbers in fourth grade.
- In fourth grade, the place value concepts developed in grades K-3 will be expanded to include decimal notation.
- Understand place value. (2.NBT.1 – 4 and 2.NBT.5 – 9)

Explanation and Examples:

This standard refers to place value understanding, which extends beyond an algorithm or procedure for rounding. The expectation is that students have a deep understanding of place value and number sense and can explain and reason about the answers they get when they round.

Students should have numerous experiences using a number line and a hundred chart to support their work with rounding. Students learn when and why to round numbers. They identify possible answers and halfway points. They also understand that, by convention, if a number is exactly at the halfway point of two possible answers, the number is rounded up.

**Example:** *Round 178 to the nearest 10.*

Step 1: The answer is either 170 or 180.

Step 2: The halfway point is 175.

Step 3: 178 is between 175 and 180.

Step 4: Therefore, the rounded number is 180.
**Instructional Strategies:**

Prior to implementing rules for rounding students need to have opportunities to investigate and explore place value. A strong understanding of place value is essential for the development of number sense and the subsequent work that involves rounding numbers.

Building on previous understandings of the place value of digits in multi-digit numbers, place value is used to round whole numbers. Dependence on learning rules can be eliminated with strategies such as the use of a number line to determine which multiple of 10 or of 100, a number is nearest (5 or more rounds up, less than 5 rounds down). As students’ understanding of place value increases, the strategies for rounding are valuable for estimating, justifying and predicting the reasonableness of solutions in problem-solving.

Continue to use manipulatives like hundreds charts, place-value charts, and number lines.

Below, a number line has been used to show several examples of whole numbers being rounded to the nearest tens place.

![Number Line](image)

**Tools / Resources:**

See [Learning Progressions NBT](#) for detailed information.

**Illustrative Mathematics** tasks:

- [3.NBT Rounding to 50 or 500](#)
- [3.NBT Rounding to the Nearest Ten and Hundred](#)
- [3.NBT, 4.NBT Rounding to the Nearest 100 and 1000](#)

Also see: “Correcting the Calculator,” NCSM, Great Tasks for Mathematics K-5, (2013).

Visit [K-5 Math Teaching Resources](#) click on **Number**, then on **3rd Grade**. Scroll down to 3.NBT.1 to access resources specifically for this standard.
Common Misconceptions: (3.NBT.1 through 3.NBT.3)
The use of terms “round up” and “round down” confuse many students. For example, the number 37 would round to 40 or it “rounds up”. The digit in the tens place is changed from 3 to 4 (rounds up). This misconception is what causes the problem when applied to rounding down. The number 32 should be rounded (down) to 30, but using the logic mentioned for rounding up, some students may look at the digit in the tens place and take it to the previous tens place before 30, resulting in the incorrect value of 20. To remedy this misconception, students need to use a number line to visualize the placement of the number and ask questions such as: “32 comes between which tens? Which ten is it closer to?”

Developing the understanding of the WHY behind rounding, what the answer choices are, using place value understanding to round numbers (rather than relying on rounding rhymes e.g. Find your number, look next door, five or greater add on one more!) can alleviate much of the misconception and confusion related to rounding.
Domain: Number and Operations in Base Ten (NBT)

Cluster A: Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard: 3.NBT.2
Fluently (efficiently, accurately, & flexibly) add and subtract within 1000 using strategies (e.g. composing/decomposing by like base-10 units, using friendly or benchmark numbers, using related equations, compensation, number line, etc.) and algorithms (including, but not limited to: traditional, partial-sums, etc.) based on place value, properties of operations, and/or the relationship between addition and subtraction. (3.NBT.2)

Suggested Standards for Mathematical Practice (MP):

✓ MP.2 Reason abstractly and quantitatively.
✓ MP.7 Look for and make use of structure.
✓ MP.8 Look for and express regularity in repeated reasoning.

Connections: See 3.NBT.1

Explanation and Examples:
This standard refers to fluently, which means with accuracy, efficiency (using a reasonable number of steps and time), and flexibility (using strategies such as the distributive property). The word algorithm refers to a procedure or a series of steps. There are other algorithms other than the standard/traditional algorithm. Third grade students should have experiences beyond the standard/traditional algorithm. In fact, it is argued that students should be introduced to other algorithms (such as partial sums) that are firmly rooted in place value before introducing the traditional algorithm.

Problems should include both vertical and horizontal forms, including opportunities for students to apply the commutative and associative properties. Students explain their thinking and show their work by using strategies and algorithms, and verify that their answer is reasonable.

Example:
There are 178 fourth graders and 225 fifth graders on the playground. What is the total number of students on the playground?

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
</tr>
</thead>
</table>
| 100 + 200 = 300  
70 + 20 = 90  
8 + 5 = 13  
300 + 90 + 13 = 403 students | I added 2 to 178 to get 180. I added 220 to get 400. I added the 3 left over to get 403. | I know the 75 plus 25 equals 100. I then added 1 hundred from 178 and 2 hundreds from 275. I had a total of 4 hundreds and I had 3 more left to add. So I have 4 hundreds plus 3 more which is 403. | 178 + 225 =?  
178 + 200 = 378  
378 + 20 = 398  
398 + 5 = 403 |

Example continued:

Student 1: 178 + 200 = 378  
78 + 20 = 98  
8 + 5 = 13  
300 + 90 + 13 = 403

Student 2: I added 2 to 178 to get 180. I added 220 to get 400. I added the 3 left over to get 403.

Student 3: I know the 75 plus 25 equals 100. I then added 1 hundred from 178 and 2 hundreds from 275. I had a total of 4 hundreds and I had 3 more left to add. So I have 4 hundreds plus 3 more which is 403.

Student 4: 178 + 225 = 403
Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.

Example:

- Mary read 573 pages during her summer reading challenge. She was only required to read 399 pages. How many extra pages did Mary read beyond the challenge requirements?

Students may use several approaches to solve the problem. Examples of these methods are listed below:

- $399 + 1 = 400$, $400 + 100 = 500$, $500 + 73 = 573$, therefore $1+ 100 + 73 = 174$ pages (Adding up strategy)
- $400 + 100$ is 500; $500 + 73$ is 573; 100 + 73 is 173 plus 1 (for 399, to 400) is 174 (Compensation strategy)
- Take away 73 from 573 to get to 500, take away 100 to get to 400, and take away 1 to get to 399. Then $73 + 100 + 1 = 174$ (Subtracting to count down strategy)
- $399 + 1$ is 400, 500 (that’s 100 more). $510, 520, 530, 540, 550, 560, 570$, (that’s 70 more), $571, 572, 573$ (that’s 3 more) so the total is $1 + 100 + 70 + 3 = 174$ (Adding by friendly numbers strategy)

Instructional Strategies: (see cluster 2.NBT.B for strategies that students were introduced to in second grade)

Strategies used to add and subtract two-digit numbers can now be applied to fluently to add and subtract whole numbers within 1000. These strategies should be discussed so that students can make comparisons and move toward efficient methods.

Addition strategies based on place value for $348 + 537$ may include:

- Adding by place value: $300 + 500 = 800$ and $40 + 30 = 70$ and $8 + 7 = 15$. Then $800 + 70 + 15 = 885$.
- Incremental adding (breaking one number into hundreds, tens, and ones): $537 + 100 = 637$, $637 + 100 = 737$, $737 + 100 = 837$. Then $837 + 10 = 847$, $847 + 10 = 857$, $857 + 10 = 867$, $867 + 10 = 877$. Then $877 + 8 = 885$.
- Compensation (making a friendly number): Take 2 from 537 and move those 2 to the 348 to make 350 + 535. Much easier to add these to get 885. Definition of compensation method would be helpful.

Subtraction strategies based on place value for $81 - 37$ may include:

- Adding up (from smaller number to larger number): $37 + 3 = 40$, $40 + 40 = 80$, $80 + 1 = 81$, and $3 + 40 + 1 = 44$.
- Incremental subtracting: $81 - 10 = 71$, $71 - 10 = 61$, $61 - 10 = 51$, $51 - 7 = 44$.
- Subtracting by place value: $81 - 30 = 51$, $51 - 7 = 44$.

Number sense and computational understanding is built on a firm understanding of place value.
Resources/Tools:
Illustrative Mathematics tasks:
- 3.OA, MD, NBT Classroom Supplies

Visit K-5 Math Teaching Resources click on Number, then on 3rd Grade. Scroll down to 3.NBT.2 to access resources specifically for this standard.

Thinking Blocks on Math Playground allows students several ways to model problems.

Common Misconceptions: See 3.NBT.1
Students may think that the 4 in 46 represents 4, not 40 or 4 tens. Students need many experiences representing two- and three-digit numbers with manipulatives that group (base ten blocks) and those that do NOT group, such as counters, etc.
Domain: Number and Operations in Base Ten (NBT)

- **Cluster A:** *Use place value understanding and properties of operations to perform multi-digit arithmetic.*

**Standard:** 3.NBT.3
Multiply one-digit whole numbers by multiples of 10 in the range 10 to 90 (e.g. 9 \cdot 80, 5 \cdot 60) using strategies based on place value and properties of operations. *(3.NBT.3)*

**Suggested Standards for Mathematical Practice (MP):**
- ✓ MP.2 Reason abstractly and quantitatively.
- ✓ MP.7 Look for and make use of structure.
- ✓ MP.8 Look for and express regularity in repeated reasoning.

**Connections:** See 3.NBT.1

**Explanation and Examples:**
This standard extends students’ work in multiplication by having them apply their understanding of place value. This standard expects students to go beyond tricks that hinder understanding such as “just adding zeroes” and explain and reason about their products. *For example, in the problem 50 \times 4, students should think of this as 4 groups of 5 tens or 20 tens. Twenty tens equals 200.*

Students use base ten blocks, diagrams, or hundreds charts to multiply one-digit numbers by multiples of 10 from 10-90. They apply their understanding of multiplication and the meaning of the multiples of 10. For example, 30 is 3 tens and 70 is 7 tens. They can interpret 2 \times 40 as 2 groups of 4 tens or 8 groups of ten. They understand that 5 \times 60 is 5 groups of 6 tens or 30 tens and know that 30 tens is 300. After developing this understanding they begin to recognize the patterns in multiplying by multiples of 10.

*** As the teacher, one of the KEY understandings of multiplicative reasoning you want to develop in your students is that multiplication extends beyond repeated addition. If students do not move from additive to multiplicative thinking then their development in understanding higher mathematics will be compromised. Students should understand that there is a *multiplicative unit* and a *scaling factor* in the following mathematical expression – *3 \times 50. 50 or 5 tens* is the multiplicative unit *(multiplicand)* and *3* is the scaling factor *(multiplier)* for that multiplicative unit. Essentially the expression is telling you that there are “3 groups of 50/5 tens” or “3 copies of 50/5 tens”. *This seems it is being repeated from previous.*
**Instructional Strategies:**

Understanding what each number in a multiplication expression represents is important. Multiplication problems need to be modeled with pictures, diagrams or concrete materials to help students understand what the factors and products represent. The effect of multiplying numbers needs to be examined and understood.

The use of area models is important in understanding the properties of operations of multiplication and the relationship of the factors and its product. Composing and decomposing area models is useful in the development and understanding of the distributive property in multiplication.

![Area Model](image)

**Resources/Tools:**

See [EngageNY Modules](#).

**Illustrative Mathematics** tasks:

- [3.NBT How Many Colored Pencils?](#)

Visit [K-5 Math Teaching Resources](#) click on **Number**, then on **3rd Grade**. Scroll down to 3.NBT.3 to access resources specifically for this standard.

**Thinking Blocks** on Math Playground allows students several ways to model problems.

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- [Multiplication: It’s in the Cards](#) (view of some of the lessons)

**Common Misconceptions:** See [3.NBT.1](#)
Domain: Number and Operations—Fractions (NF)

Cluster A: Develop understanding of fractions as numbers.
Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.

Standard: 3.NF.1
Understand a fraction \( \frac{1}{b} \) as the quantity formed by 1 part when a whole is partitioned into \( b \) equal parts; understand a fraction \( \frac{a}{b} \) as the quantity formed by \( a \) parts of size \( \frac{1}{b} \). (3.NF.1)

Suggested Standards for Mathematical Practice (MP):
- MP.1 Make sense of problems and persevere in solving them.
- MP.4 Model with mathematics.
- MP.7 Look for and make use of structure.

Connections:
This cluster is connected to:
- Partitioning traditional shapes into equal parts (Grade 1.G.3) & Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths (2.G.3).

Explanation and Examples:
Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.
This standard refers to the sharing of a whole being partitioned or split. Fraction models in third grade include area models (circles, rectangles, squares, etc.) and linear models (linear, measurement). Set models (parts of a group) are not expected to be mastered in Third Grade.

In 3.NF.1 students should focus on the concept that a fraction is made up (composed) of many pieces of a unit fraction, which has a numerator of 1. For example, the fraction \( \frac{3}{5} \) is composed of 3 pieces that each have a size of \( \frac{1}{5} \).

Some important concepts related to developing understanding of fractions include:
- Understand fractional parts must be equal-sized
- The number of equal parts tells how many make a whole.
- As the number of equal pieces in the whole increases, the size of the fractional pieces decreases.
- The size of the fractional part is relative to the whole.
To develop understanding of fair shares, students first participate in situations where the number of equal parts is greater than the number of children and then progress into situations where the number of equal parts is less than the number of children.

**Examples of Area or Region Models:**

- Four children share a pan of brownies so that each child receives a fair share. How much of the pan of brownies will each child receive?
- Six children share two pans of brownies so that each child receives a fair share. What portion will each child receive?
- What fraction of the rectangle is shaded? How might you shade the rectangle in another way but end up with the same fraction shaded?

![Area or Region Model Example](image)

Solution: \( \frac{2}{4} \) or \( \frac{1}{2} \)

**Example of a Linear Model:**

What fraction does the letter \( a \) represent on this number line? (Linear Model) Explain your thinking.

![Linear Model Example](image)

**Instructional Strategies:** (3.NF.1 through 3.NF.3)

Understanding fractions is an essential element if students are to be successful in higher mathematics. 3rd grade lays the foundation for this understanding so the use of concrete manipulatives, visuals, diagrams, and language cannot be overemphasized.

This is the initial experience students will have with fractions and instruction is best implemented over an extended period of time. Students need many opportunities to discuss fractional parts using concrete models to develop familiarity and understanding of fractions.

Understanding that a fraction is a quantity formed by part of a whole is essential to number sense with fractions. Fractional parts are the building blocks for all fraction concepts. Students need to relate dividing a shape into equal parts and representing this relationship on a number line, where the equal parts are between two whole numbers.

Help students plot fractions on a number line, by using the meaning of the fraction. For example, to plot \( \frac{4}{5} \) on a number line, there are 5 equal parts with 4 copies of the 5 equal parts. 5 equal parts make the whole. The unit fraction is \( \frac{1}{5} \).

![Linear Model Example](image)

4 copies of the 5 equal parts represent the fractional amount shown on this number line.

**Knowing the whole and the unit fraction is critical when understanding and working with fractions.**
As students counted with whole numbers, they should also count with fractions. Counting equal-sized parts helps students determine the number of parts it takes to make a whole and recognize fractions that are equivalent to whole numbers. Make sure you count beyond the whole number 1. Too frequently students believe fractions only exist between 0 and 1. They must build the understanding that fractions definitely more beyond 1.

**Tools / Resources**

*Illustrative Mathematics* tasks:
- 3.NF Naming the Whole for a Fraction
- 3.MD, 3.G, 3.NF Halves, thirds, and sixths


For detailed explanations and examples see the *Number and Operations - Fractions* learning progression.

Visit [K-5 Math Teaching Resources](#) click on Number, then on 3rd Grade. Scroll down to 3.NF.1 to access resources specifically for this standard.

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- Access this [link](#) to view many quality lessons and interactives focusing on fractions.

**Common Misconceptions:**

The idea that the smaller the denominator, the smaller the piece, or the larger the denominator, the larger the piece, is based on the thinking and reasoning students used with working with whole numbers (the smaller a number, the less it is, or the larger a number, the more it is). The use of different models, such as fraction bars and number lines, allows students to compare unit fractions to reason about their sizes and correct this misconception.

Students think all shapes can be divided the same way. Present shapes other than circles, squares or rectangles to prevent students from over generalizing that all shapes can be divided the same way. For example, have students fold a triangle into eighths. Provide oral directions for folding the triangle:

1. Fold the triangle into half by folding the left vertex (at the base of the triangle) over to meet the right vertex.
2. Fold in this manner two more times.
3. Have students label each eighth using fractional notation. Then, have students count the fractional parts in the triangle (one-eighth, two-eighths, three-eighths, and so on).

Students frequently will count “tick marks” on number lines (linear/length model) rather than the distance or region partitioned. Fractional pieces is the space between the tick marks, not the tick marks themselves.
**Domain: Number and Operations—Fractions (NF)**

 ► **Cluster A:** *Develop understanding of fractions as numbers.*

  *Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.*

**Standard: 3.NF.2**

Understand a fraction as a number on the number line; represent fractions on a number line diagram.

3.NF.2a. Represent a fraction \( \frac{1}{b} \) 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 \( \frac{1}{b} \) and that the endpoint of the part based at 0 locates the number \( \frac{1}{b} \) on the number line. *(3.NF.2a)*

Ex:

3.NF.2b. Represent a fraction \( \frac{a}{b} \) on a number line diagram by marking off \( a \) lengths \( \frac{1}{b} \) from 0. Recognize that the resulting interval has size \( \frac{a}{b} \) and that its endpoint locates the number \( \frac{a}{b} \) on the number line *(a is the countable units of \( \frac{1}{b} \) that determines the place on the number line). *(3.NF.2b)*

**Suggested Standards for Mathematical Practice (MP):**

✓ MP.1 Make sense of problems and persevere in solving them.
✓ MP.4 Model with mathematics.
✓ MP.7 Look for and make use of structure.

**Connections:** See 3.NF.1

**Explanation and Examples:**

Third grade is the first time students will work with a number line for numbers that are between whole numbers (e.g., that \( \frac{1}{2} \) is between 0 and 1).

In the number line diagram below, the space between 0 and 1 is divided (partitioned) into 4 equal regions. The distance from 0 to the first segment is *1 of the 4* segments from 0 to 1 or \( \frac{1}{4} \) *(3.NF.2a)*. Similarly, the distance from 0 to the third segment is *3 segments* that are each one-fourth long. Therefore, the distance of 3 segments from 0 is the fraction \( \frac{3}{4} \) *(3.NF.2b).*

![Number Line Diagram](image)
Students transfer their understanding of parts of a whole to partition a number line into equal parts. There are two new concepts addressed in this standard which students should have time to develop.

1. On a number line from 0 to 1, students can partition (divide) it into equal parts and recognize that each segmented part represents the same length.

2. Students label each fractional part based on how far it is from zero to the endpoint.

**Instructional Strategies:** See 3.NF.1

**Tools / Resources:**

**Illustrative Mathematics** tasks:
- 3.NF Locating Fractions Less than One on the Number Line
- 3.NF Closest to 1/2
- 3.NF Locating Fractions Greater than One on the Number Line
- 3.NF Find 1
- 3.NF Find 2/3
- 3.NF Which is Closer to 1?
- 3.NF Find 1/4 Starting from 1, Assessment Version
- 3.NF Find 7/4 starting from 1, Assessment Variation
- 3.NF Find 1 Starting from 5/3, Assessment Variation

Visit K-5 Math Teaching Resources click on **Number**, then on **3rd Grade**. Scroll down to 3.NF.2 to access resources specifically for this standard.

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- Access this link to view many quality lessons and interactives focusing on fractions.

**Common Misconceptions:** See 3.NF.1
Domain: Number and Operations—Fractions (NF)

► **Cluster A: Develop understanding of fractions as numbers.**

*Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.*

**Standard: 3.NF.3**

Explain equivalence of fractions, and compare fractions by reasoning about their size (it is a mathematical convention that when comparing fractions, the whole is the same size).

3.NF.3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. (3.NF.3a)

3.NF.3b. Recognize and generate simple equivalent fractions, (e.g. \( \frac{1}{2} = \frac{2}{4}, \frac{1}{6} = \frac{2}{3} \)) Explain why the fractions are equivalent, e.g. by using a visual fraction model. (3.NF.3b)

3.NF.3c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. 
*Examples: Express 3 in the form \( \frac{3}{1} \); recognize that \( \frac{6}{1} = 6 \); locate \( \frac{4}{4} \) and 1 at the same point of a number line diagram.* (3.NF.3c)

3.NF.3d. 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 relational symbols >, <, =, or ≠, and justify the conclusions, (e.g. by using a visual fraction model.) (3.NF.3d)

**Suggested Standards for Mathematical Practice (MP):**

✓ MP.1  Make sense of problems and persevere in solving them.
✓ MP.2  Reason abstractly and quantitatively.
✓ MP.3  Construct viable arguments and critique the reasoning of other.
✓ MP.4  Model with mathematics.
✓ MP.6  Attend to precision.
✓ MP.7  Look for and make use of structure.
✓ MP.8  Look for and express regularity in repeated reasoning.

**Connections:** See 3.NF.1

**Explanation and Examples:**

Equivalence is a core concept in mathematics. Students must not be shortchanged in the amount of time needed to work to develop a firm understanding of this concept. Often students who claim to understand what the equal sign means in an equation (6 x 4 = 24), will be confused when the equation is given as 24 = 6 x 4. This confusion can get further muddled if time is not given when working with equivalence in fractions.

As adults, we know that when comparing fractional amounts, the **whole must be the same.** Often this assumption is continued in textbooks. It will be stated that \( \frac{1}{2} \) is equal to \( \frac{2}{4} \), but this only true when they are referring to the same whole. This assumption cannot be made with children. We need to be explicit when comparing fractions.

An important concept when comparing fractions is to look at the size of the parts and the number of the parts. For example, \( \frac{1}{8} \) is smaller than \( \frac{1}{2} \) because when 1 whole is cut into 8 pieces, the pieces are much smaller than when the same
1 whole is cut into 2 pieces. (Students can SEE this by modeling----folding the same size paper in half, in half again, and so on.)

3.NF.3a and 3.NF.3b expect students to use visual fraction models (such as area models), number lines, and reasoning about their size to explore the idea of equivalent fractions. Students at this level should explore equivalent fractions using models, rather than using algorithms.

When using reasoning to compare fractions, students can think of benchmarks. For example, I can compare \( \frac{5}{6} \) and \( \frac{3}{4} \) by thinking about their distance from 1 on a number line. \( \frac{5}{6} \) is only \( \frac{1}{6} \) away from 1, but \( \frac{3}{4} \) is \( \frac{1}{4} \) away from 1. \( \frac{1}{4} \) is a larger portion than \( \frac{1}{6} \) so \( \frac{3}{4} \) is a greater distance away from 1. This means that \( \frac{5}{6} \) is greater than \( \frac{3}{4} \).

In this standard, students should also reason that comparisons are only valid if the wholes are identical. For example, \( \frac{1}{2} \) of a large pizza is a different amount than \( \frac{1}{2} \) of a small pizza. Students should be given opportunities to discuss and reason about which \( \frac{1}{2} \) is larger.

An important concept when comparing fractions is to look at the size of the parts and the number of the parts. For example, \( \frac{1}{8} \) is smaller than \( \frac{1}{2} \) because when 1 whole is cut into 8 pieces, the pieces are much smaller than when 1 whole is cut into 2 pieces.

Students recognize when examining fractions with common denominators, the wholes have been divided into the same number of equal parts. So the fraction with the larger numerator has the larger number of equal parts.

\[
\frac{2}{6} < \frac{5}{6}
\]

To compare fractions that have the same numerator but different denominators, students understand that each fraction has the same number of equal parts but the size of the parts are different. They can infer that the same number of smaller pieces is less than the same number of bigger pieces.

\[
\frac{3}{8} < \frac{3}{4}
\]

This standard also includes writing whole numbers as fractions. The concept relates to fractions as division problems, where the fraction \( \frac{3}{1} \) is 3 wholes divided into one group. This standard is the building block for later work where students divide a set of objects into a specific number of groups. Students must understand the meaning of \( \frac{a}{1} \).

**Instructional Strategies:** See 3.NF.1
Tools/Resources:

**Illustrative Mathematics** tasks:
- 3.NF Ordering Fractions
- 3.NF Comparing Fractions
- 3.NF Snow Day
- 3.NF Jon and Charlie’s Run
- 3.MD, 3.G, 3.NF Halves, thirds, and sixths
- 3.NF Comparing Fractions with a Different Whole
- 3.NF Comparing Fractions with the Same Denominator, Assessment Variation
- 3.NF Comparing Fractions with the Same Numerators, Assessment Variation
- 3.NF Fraction Comparisons With Pictures, Assessment Variation

Georgia Department of Education:
- “Making a Cake”

See: Grade 3-5 Number and Operations Fractions Learning Progressions for detailed information:

Visit K-5 Math Teaching Resources click on Number, then on 3rd Grade. Scroll down to 3.NF.3 to access resources specifically for this standard.

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- Access this link to view many quality lessons and interactivs focusing on fractions.
- Fraction Game.

**Common Misconceptions**: See 3.NF.1

Misunderstanding the meaning of the equal size is the most common misconception for students. Make sure you spend enough time working with models and visuals so students can build a firm foundation of equality and then build on the understanding of inequality.

Another misconception is not understanding that when comparing fractions the wholes have to be the same. \( \frac{1}{2} \) of a large pizza is very different than \( \frac{1}{2} \) of a small pizza. Discussing this idea with your students is a critical foundational piece of learning.
Domain: Measurement and Data (MD)

- **Cluster A:** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

**Standard: 3.MD.1**
Tell and write time to the nearest minute using a.m. and p.m. 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.)* *(See Table 1)* *(3.MD.1)*

**Suggested Standards for Mathematical Practice (MP):**
- MP.1 Make sense of problems and persevere in solving them.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.

**Connections:** *(3.MD.1)*
This standard is related to:
- Work with time and money in Grade 2 (2.MD.7)

**Explanation and Examples:**
This standard expects students to solve elapsed time, including word problems. Students can use clock models or number lines to solve. On the number line, students should be given the opportunities to determine the intervals and size of jumps on their number line. Students could use pre-marked number lines (intervals every 5 or 15 minutes) or open number lines (intervals determined by students).

Students in second grade learned to tell time to the nearest five minutes. In third grade, they extend telling time and measure elapsed time both in and out of context using clocks and number lines. They are to also distinguish between a.m. and p.m.

**Instructional Strategies:** *(3.MD.1)*
A clock is the common instrument for measuring time. Learning to tell time has much to do with learning to read a dial-type instrument rather than with time measurement. Students should develop the understanding that an analog clock is essentially a number line that has been formed into a circle. The grouping (or bundling) of time is different in that hours are grouped by 12s or 24s and minutes are grouped by 60s.

Students have experience in telling and writing time from analog and digital clocks to the hour and half hour in Grade 1 and to the nearest five minutes in Grade 2. Now students will tell and write time to the nearest minute (distinguishing between a.m. and p.m.) and measure time intervals in minutes.

Providing geared analog clocks allows students to understand the movement of the minute hand. If students are struggling with telling time, try the “One-handed Clock” lesson provided in Dr. John Van de Walle’s book, *Teaching Student-Centered Mathematics PreK – 2.* The hour hand gives the most information about the time. To give students a better understanding of this you will need to buy two inexpensive clocks. Place both clocks in an area so all students can...
Major Clusters

Supporting Clusters

Additional Clusters

see them but are easy for you to access. Make sure both clocks are set to the same correct time and then remove the minute hand from one of the clocks. The clock with both hands should then be covered so that students will see just the one-handed clock. At various times during the day, draw your students’ attention to the one-handed clock and ask them to tell you the time. Then remove the cover from the two-handed clock to verify the time. Students will begin to see that the hour hand gives them an idea of how many minutes past the hour it is based on how far it is between two numbers.

Students need experience representing time from a digital clock to an analog clock and vice versa.

Provide word problems involving addition and subtraction of time intervals in minutes. Have students represent the problem on a number line.

Resources/Tools:

For detailed information see Measurement Learning Progression

See EngageNY Modules

Visit K-5 Math Teaching Resources click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.1 to access resources specifically for this standard.

Illustrative Mathematics tasks:

• Dajuana’s Homework

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• Elapsed Time

Thinking Blocks on Math Playground allows students several ways to model problems.

Number line tool for elapsed time:

Elapsed Time: How to Solve Elapsed Time on a Number Line

Common Misconceptions:

Avoid the use of paper plate clocks. Students need to see the actual relationship between the hour and the minute hand. This is not adequately represented on student-made clocks since there are not gears to move the hands so that they are in concert with each other. When students represent the time, they frequently put the hour hand on the whole number whether it is on the hour or half-past the hour. Using geared clocks will avoid this misconception. (See the One-Handed Clock lesson referred to in the Instructional Strategies section above.)
Domain: Measurement and Data (MD)

▶ **Cluster A:** *Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.*

**Standard: 3.MD.2**

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l) (Excludes cubed units such as \( cm^3 \) and finding the geometric volume of a container). *(3.MD.2)*

**Suggested Standards for Mathematical Practice (MP):**
- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.

**Connections:**
This standard is foundational to:
- Measurement and Data standard in 4th grade (4.MD.2)
- Measurement and Data standards in 5th grade (5.MD.3, 5.MD.4, 5.MD.5)

**Explanation and Examples:**
This standard asks for students to reason about the units of mass and volume. Students need multiple opportunities weighing classroom objects and filling containers to help them develop a basic understanding of the size and weight of a liter, a gram, and a kilogram. Milliliters may also be used to show amounts that are less than a liter. Word problems should only be one-step and include the same units.

**Example:**
Students identify 5 things that have a mass of about one gram. They record their findings with words and pictures. (Students can repeat this for 5 grams and 10 grams.) This activity helps develop gram benchmarks and assists in estimation activities. One large paperclip weighs about one gram. A box of large paperclips (100 clips) has a mass of about 100 grams so 10 boxes would have a mass of one kilogram.

Foundational understandings to help with measure concepts:
- Understand that larger units can be subdivided into equivalent units (partition).
- Understand that the same unit can be repeated to determine the measure (iteration).
- Understand the relationship between the size of a unit and the number of units needed (compensatory principle).

**Instructional Strategies:**
Students need multiple opportunities “massing” classroom objects and filling containers to help them develop a basic understanding of the size and mass of a liter, a gram, and a kilogram. Milliliters may also be used to show amounts that are less than a liter.
Provide opportunities for students to use appropriate tools to measure and estimate liquid volumes in liters only and masses of objects in grams and kilograms. Students need practice in reading the scales on measuring tools since the markings may not always be in intervals of one. The scales may be marked in intervals of two, five or ten.

Allow students to hold gram and kilogram weights in their hands to use as a benchmark for estimation. Use water colored with food coloring so that the water can be seen in a beaker.

Students should **estimate** volumes and masses before finding the exact measures. Show students a group of objects (all are the same object such as a grouping of small water bottles or same size jewelry boxes. Then, indicate one of the objects and tell the students its weight. Fill a box with more of the same objects and ask students to estimate the weight of them.

Use similar strategies with liquid measures. Be sure that students have opportunities to pour liquids into different size containers to see how much liquid will be in certain whole liters. Show students containers and ask, “How many liters do you think will fill this container?”

If estimating several containers, students should make an estimate, then complete the measurement. They can then continue the process of estimating and then measuring, rather than all estimates and then all measures. It is important to provide feedback to students on their estimates by using measurement as a way of gaining feedback on estimates.

**Tools/Resources:**
See [K-5 Measurement Learning Progressions](#) for detailed information.

**Illustrative Math site task:**
- [3.MD How Heavy?](#)

Visit [K-5 Math Teaching Resources](#) click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.2 to access resources specifically for this standard.

**Common Misconceptions:**
Students often focus on size to determine estimates of mass. They can be confused by a big fluffy object and a tiny dense object. Because students cannot tell actual mass until they have handled an object, it is important that teachers do not ask students to estimate the mass of objects until they have had the opportunity to lift the objects and then make an estimate of the mass.

Students may read the mark on a scale that is below a designated number on the scale as if it was the next number. For example, a mark that is one mark below 80 grams may be read as 81 grams. Students realize it is one away from 80, but do not think of it as 79 grams.
Domain: Measurement and Data (MD)

Cluster A: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

Standard: 3.MD.3

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.) (Excludes multiplicative comparison problems) (See Table 1 and Table 2). (3.MD.2)

Suggested Standards for Mathematical Practice (MP):

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.

Connections:

This standard is related to:
- Problem solving standards in 2nd grade (2.OA.1) & in 3rd grade (3.OA.8).

This standard is foundational to:
- Measurement and Data standard in 4th grade (4.MD.2)
- Measurement and Data standards in 5th grade (5.MD.3, 5.MD.4, 5.MD.5)

Explanation and Examples:

This standard excludes multiplicative comparison problems (problems involving notions of “times as much”). These types of problems will be learned in 4th grade.

This standard is building on the work from 1st and 2nd grade in solving problems in context (word problems) – 1.OA.1 & 2.OA.1 – and focusing on masses and liquid volumes (capacities) but not excluding other areas of measurement. With the focus on measurement, the role of the unit must be emphasized. Students in third grade are not required to convert so units must be the same.

Examples:

If I need 48 cups of lemonade to bring to class during field day and I have containers that hold 8 cups each, how many containers will I need to bring with me that day?

You have 21 inches of string. Your best friend cut it into 3 equal pieces. How long is each piece?

A dump truck brought a load of rocks to school. The principal put 284 pounds of the rock into the front garden area. The custodian put 545 pounds of rock in the planters around the driveway. The science teacher said there is 125 pounds left to use. How much did the dump truck bring to school?

Instructional Strategies:
Students need to have multiple opportunities to solve problems in context and discuss the units involved. Estimation should also be used so students have an idea of what would be a reasonable answer. Don’t expect an exact answer. Ask students to think about and provide a range of where the answer would be. Student discussions are critical in establishing an environment that supports estimation and backing up their thinking with evidence.

**Tools/Resources:**

Thinking Blocks on Math Playground allows students several ways to model problems.

Greg Tang’s Word Problem Generator

See K-5 Measurement Learning Progressions for detailed information.
Domain: Measurement and Data (MD)

◆ Cluster B: Represent and interpret data.

Standard: 3.MD.4
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. (See Table 1). For example, draw a bar graph in which each square in the bar graph might represent 5 pets. (3.MD.3)

Suggested Standards for Mathematical Practice (MP):
✓ MP.1 Make sense of problems and persevere in solving them.
✓ MP.4 Model with mathematics.
✓ MP.5 Use appropriate tools strategically.
✓ MP.6 Attend to precision.
✓ MP.7 Look for and make use of structure.

Connections: (3.MD.4 & 3.MD.5)
This cluster is connected to:
• Represent and solve problems involving multiplication and division. (Grade 3.OA.1 through 3.OA.4)
• Multiply and divide within 100. (Grade 3.OA.7)
• Solve problems involving the four operations, and identify and explain patterns in arithmetic. (Grade 3.OA.8 & 3.OA.9)
• Represent and interpret data. (Grade 2.MD.10 and 2.MD.11)

Explanation and Examples:
Students should have opportunities reading and solving problems using scaled graphs before being asked to draw one. Graphs on the next page all use five as the scale interval, but students should experience different intervals to further develop their understanding of scale graphs and number facts.

While exploring data concepts, students should 1) Pose a question, 2) Collect data, 3) Analyze data, and 4) Interpret data. Students should be graphing data that is relevant to their lives.

Example:
The teacher can pose a question that will lead students to want to investigate and collect information: Do all students in our school like the same types of books? What types of books should we recommend that the librarian (or principal or PTA) order for the library?
Students should come up with questions. What is the typical type of book read in our school?
Then students need to collect and organize data. They can create student surveys that can be delivered in paper form or in electronic form.
Pictographs: Scaled pictographs include symbols that represent multiple units. Below is an example of a pictograph with symbols that represent multiple units. Graphs should include a title, scale, categories, category label, and data. Students need to use both horizontal and vertical pictographs.

Example of Scaled Pictograph:

<table>
<thead>
<tr>
<th>Number of Books Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nancy</td>
</tr>
<tr>
<td>Juan</td>
</tr>
</tbody>
</table>

�� = 5 Books

- Bar Graphs (these examples are scaled bar graphs): Students should use both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data.

Analyzing and Interpreting data could include:
- How many more nonfiction books were read than fantasy books?
- Did more people read biography and mystery books or fiction and fantasy books?
- About how many books in all genres were read?
- Using the data from the graphs, what type of book was read more often than a mystery but less often than a fairytale?
- What interval was used for this scale?
- What can we say about types of books read? What is a typical type of book read?
- If you were to purchase a book for the school library which would be the best genre?

Instructional Strategies: (3.MD.4 and 3.MD.5)

Representation of a data set is extended from picture graphs and bar graphs with single-unit scales to scaled picture graphs and scaled bar graphs. Intervals for the graphs should relate to multiplication and division with 100 (product is 100 or less and numbers used in division are 100 or less).

Students are to draw picture graphs in which a symbol or picture represents more than one object. Bar graphs are drawn with intervals greater than one. Ask questions that require students to compare quantities and use mathematical concepts and skills. Use symbols on picture graphs that student can easily represent half of, or know how many half of the symbol represents.

In picture graphs, you could use values for the icons in which students need practice with their multiplication facts. For example,ื ื represents 7 people. If there are three ื، students will need to use known facts to determine that the three icons represents 21 people. The intervals on the vertical scale in bar graphs should not exceed 100.
*** Note: If a scale is used that is not easily divided into half then only full pictures should be used for that graph. For example, the situation above had each picture represent 7 people, so this scale would not be used with half pictures since you cannot have half of a person.

Resources/Tools

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- **“Bar Grapher”**, This is a NCTM site that contains a bar graph tool to create bar graphs.
- **Picture This**
- **“It’s All About Multiplication-Exploring Equal Sets”** – Students listen to the counting story, *What Comes in 2’s, 3’s, & 4’s*, and then use counters to set up multiple sets of equal size. They fill in a table listing the number of sets, the number of objects in each set, and the total number in all. They study the table to find examples of the order (commutative) property. Finally, they apply the equal sets model of multiplication by creating pictographs in which each icon represents several data points.
- **“What’s in a Name? – Creating Pictographs”** – This is a series of lessons in which students use data tools, one of which is pictographs, and answer questions about the data set.

Georgia Department of Education:

- **“Barnyard Legs”** - Students solve multiplication problems using different strategies based on Amanda Bean’s Amazing Dream, A Mathematical Story by Cindy Neuschwander or a similar book about multiplication.
- **“Guess Who’s Coming to Dinner”**. Students are to arrange 18 people at 6 different card tables. Each table must be full and there must be an adult at each table. Students will use perimeter to find the solution.

Illustrative Mathematics tasks:

- **3.OA, MD, NBT Classroom Supplies**

Visit K-5 Math Teaching Resources click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.3 to access resources specifically for this standard.

Common Misconceptions:

Although intervals on a bar graph are not in single units, students count each square as one. To avoid this error, have students include tick marks between each interval. Students should begin each scale with 0. They should think of skip-counting and then connect to multiplication when determining the value of a bar since the scale is not in single units.
Domain: Measurement and Data (MD)

◆ **Cluster B: Represent and interpret data.**

Standard: 3.MD.5
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. (3.MD.4)

Suggested Standards for Mathematical Practice (MP):
- MP.1 Make sense of problems and persevere in solving them.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.

Connections: See 3.MD.4

Explanation and Examples:
Students in second grade measured length in whole units using both metric and U.S. customary systems. It’s important to review with students how to read and use a standard ruler including details about halves and quarter marks on the ruler. Students should connect their understanding of fractions to measuring to one-half and one-quarter inch. Third graders need many opportunities measuring the length of various objects in their environment.

Students are to measure lengths using rulers marked with halves and fourths of an inch and record the data on a line plot. The horizontal scale of the line plot is marked off in whole numbers, halves or fourths. Students can create rulers with appropriate markings and use the ruler to create the line plots.

This standard provides a context for students to work with fractions by measuring objects to a quarter of an inch.

Example:
Measure objects in your desk to the nearest \(\frac{1}{2}\) or \(\frac{1}{4}\) of an inch, display data collected on a line plot. How many objects measured \(\frac{1}{4}\)? \(\frac{1}{2}\)? etc.

Some important ideas related to measuring with a ruler are:
- The starting point where the ruler is placed to begin measuring.
- Measuring is approximate. Items that students measure will not always measure **exactly** \(\frac{1}{2}\) or one whole inch. Students will need to decide on an appropriate length estimate.
- Making paper rulers and folding to find the half and quarter marks will help students develop a stronger understanding of measuring length.
Students generate data by measuring and creating a line plot to display their findings. An example of a line plot is shown below:

![Number of Objects Measured](image)

**Instructional Strategies:** See 3.MD.4

**Tools/Resources:**
See EngageNY Modules

Visit K-5 Math Teaching Resources click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.4 to access resources specifically for this standard.

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- Inch by Inch
Domain: Measurement and Data (MD)


Cluster C: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Standard: 3.MD.6
Recognize area as an attribute of plane figures and understand concepts of area measurement.

  3.MD.6a. 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 (does not require standard square units). (3.MD.5a)

  3.MD.6b. 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 (does not require standard square units). (3.MD.5b)

Suggested Standards for Mathematical Practice (MP):
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.

Connections: (3.MD.6 through 3.MD.8)
This cluster is connected to:
- Third Grade standard for multiplication using arrays and the area model (3.OA.3).
- Fluently multiply and divide within 100 (3.OA.7).
- Distributive property (3.OA.5).

Explanation and Examples: (3.MD.6 through 3.MD.8)
These standards expect students to explore the concept of covering a region with “unit squares,” which could include square tiles or shading on grid or graph paper.

Students develop an understanding of using square units in order to measure area:
- Using different sized square units to explore area but knowing that the same unit must be used when measuring (color tiles, squares cut from construction paper, patty paper squares, etc.).
- Filling in an area with the same sized square units and counting the number of square units.
- An interactive whiteboard would allow students to see that square units can be used to cover a plane figure.
**Instructional Strategies:** (3.MD.6 through 3.MD.8)
Students can cover rectangular shapes with tiles and count the number of units (tiles) to begin developing the idea that area is a measure of covering. Area describes the size of the inside space of an object that is two-dimensional. The formulas should not be introduced before students explore and uncover the meaning of area for themselves.

The area of a rectangle can be determined by having students lay out unit squares and count how many square units it takes to completely cover the rectangle completely without overlaps or gaps.

Students need to develop the meaning for computing the area of a rectangle. A connection needs to be made between the number of squares it takes to cover the rectangle and the dimensions of the rectangle. Ask questions such as:
- What does the length of a rectangle describe about the squares covering it?
- What does the width of a rectangle describe about the squares covering it?

**Tools/Resources:**

**Illustrative Math Task:**
- [3.MD The Square Counting Shortcut](#)

Visit [K-5 Math Teaching Resources](#) click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.5 to access resources specifically for this standard.

**Common Misconceptions:**
Students may confuse perimeter and area when they measure the sides of a rectangle and then multiply. They think the attribute they find is length, which is perimeter. Pose problems situations that require students to explain whether they are to find the perimeter or area.
Domain: Measurement and Data (MD)

Cluster C: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Standard: 3.MD.7
Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard square units). (3.MD.6)

Suggested Standards for Mathematical Practice (MP):
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of other.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.

Connections: See 3.MD.6

Explanation and Examples:
Students should be counting the square units to find the area could be done in metric, customary, or non-standard square units. Using different sized graph paper, students can explore the areas measured in square centimeters and square inches.

An interactive whiteboard may also be used to display and count the unit squares (area) of a figure.

Tools/Resources:
Illustrative Math Tasks:
- 3.MD, 3.G, 3.NF Halves, thirds, and sixths
- 3.MD Finding the Area of Polygons

Visit K-5 Math Teaching Resources click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.6 to access resources specifically for this standard.

Common Misconceptions: See 3.MD.6
Domain: Measurement and Data (MD)

Cluster C: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Standard: 3.MD.8
Relate area to the operations of multiplication and addition (Measurement and Data (measurement part) Progression K–5 Pg. 16).

3.MD.8a. 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. (3.MD.7a)

3.MD.8b. 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. (3.MD.7b)

3.MD.8c. 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 $a \cdot b$ and $a \cdot c$. Use area models to represent the distributive property in mathematical reasoning (Supports 3.OA.5). (3.MD.7c)

3.MD.8d. 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. (3.MD.7d)

Example:

Students can find the total area of the shape by finding the areas of $a$, $b$, and $c$ and adding them together.

Suggested Standards for Mathematical Practice (MP):

✓ MP.1 Make sense of problems and persevere in solving them.
✓ MP.2 Reason abstractly and quantitatively.
✓ MP.4 Model with mathematics.
✓ MP.5 Use appropriate tools strategically.
✓ MP.6 Attend to precision.

Connections: See 3.MD.6
**Explanation and Examples:**

Students should tile a rectangle then multiply the side lengths to show that they come up with the same number of squares.

To find the area one could count the squares (as indicated by the numbers on each square) or multiply 3 by 4 to get a total number of squares of 12.

![Area with tiles](image)

Students should solve real-world mathematical problems as shown in the situations below.

**Example of tiling:**

Drew wants to tile the bathroom floor using 1 foot tiles. How many square foot tiles will he need?

![Bathroom floor diagram](image)

This standard also extends students' work with the **distributive property**. For example, in the picture below the area of a shape that is 6 by 7 can be determined by finding the area of the 6 x 5 section and the 6 x 2 section and then adding the two products together.

![Area with sections](image)

Students should tile areas of rectangles, determine the area, record the length and width of the rectangle, investigate the patterns in the numbers, and eventually uncover that the area can be determined by multiplying the length by the width.
Example:
Joe and John made a poster that was 4ft. by 3ft. Melisa and Debbie made a poster that was 4ft. by 2ft. They placed their posters on the wall side-by-side so that there was no space between them. How much area will the two posters cover?

Students use pictures, words, and numbers to explain their understanding of the distributive property in this context.

\[
\begin{align*}
4 \times 3 + 4 \times 2 &= 20 \\
4 (3 + 2) &= 20 \\
4 \times 5 &= 20
\end{align*}
\]

Example:
Students can decompose a rectilinear figure into different rectangles. They find the area of the figure by adding the areas of each of the rectangles together.

\[
\text{area is } 12 \times 3 + 8 \times 7 = 92 \text{ sq inches}
\]

Instructional Strategies: See 3.MD.6
Tools/Resources:
See: for detailed information in:
- Learning Progressions-Measurement and Data (measurement part)
- Learning Progressions-Measurement and Data (data part)

Illustrative Math Tasks:
- Finding the Area of Polygons
- Three Hidden Rectangles
- India’s Bathroom Tiles
- Introducing the Distributive Property


NRICH mathematics
- Tiling

Visit K-5 Math Teaching Resources click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.7 to access resources specifically for this standard.
Domain: Measurement and Data (MD)

- Cluster D: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Standard: 3.MD.9
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. (3.MD.8)

Suggested Standards for Mathematical Practice (MP):

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.4 Model with mathematics.
- MP.7 Look for and make use of structure.

Connections:
This cluster is connected to:
- Measure and estimate lengths in standard units. Grade 2.MD.1 through 2.MD.4
- Relate addition and subtraction to length. Grade 2.MD.5 & 2.MD.6

Explanation and Examples:
Students develop an understanding of the concept of perimeter by walking around the perimeter of a room, using rubber bands to represent the perimeter of a plane figure on a geoboard, or tracing around a shape on an interactive whiteboard. They find the perimeter of objects; use addition to find perimeters; and recognize the patterns that exist when finding the sum of the lengths and widths of rectangles.

Students use geoboards, tiles, and graph paper to find all the possible rectangles that have a given perimeter (e.g., find the rectangles with a perimeter of 14 cm.) They record all the possibilities using dot or graph paper, compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles.

Given a perimeter and a length or width, students use objects or pictures to find the missing length or width. They justify and communicate their solutions using words, diagrams, pictures, numbers, and an interactive whiteboard.

Students use geoboards, tiles, graph paper, or technology to find all the possible rectangles with a given area (e.g. find the rectangles that have an area of 12 square units.) They record all the possibilities using dot or graph paper, compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles. Students then investigate the perimeter of the rectangles with an area of 12.

See example shown below:
<table>
<thead>
<tr>
<th>Area</th>
<th>Length</th>
<th>Width</th>
<th>Perimeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 sq. in</td>
<td>1 in.</td>
<td>12 in.</td>
<td>26 in.</td>
</tr>
<tr>
<td>12 sq. in</td>
<td>2 in.</td>
<td>6 in.</td>
<td>16 in.</td>
</tr>
<tr>
<td>12 sq. in</td>
<td>3 in.</td>
<td>4 in.</td>
<td>14 in.</td>
</tr>
<tr>
<td>12 sq. in</td>
<td>4 in.</td>
<td>3 in.</td>
<td>14 in.</td>
</tr>
<tr>
<td>12 sq. in</td>
<td>6 in.</td>
<td>2 in.</td>
<td>16 in.</td>
</tr>
<tr>
<td>12 sq. in</td>
<td>12 in.</td>
<td>1 in.</td>
<td>26 in.</td>
</tr>
</tbody>
</table>

The patterns in the table allow the students to identify the factors of 12, connect the results to the commutative property, and discuss the differences in perimeter within the same area. This chart can also be used to investigate rectangles with the same perimeter. (Remember, squares are rectangles and should be a part of the investigation.)

**Instructional Strategies:**

Students have created rectangles when they were finding the area of rectangles and connecting them to using arrays in the multiplication of whole numbers.

To explore finding the perimeter of a rectangle, have students use twine or string (something that doesn’t stretch).

- They should measure the twine and create a rectangle before cutting it into four pieces.
- Have the student make four pieces so that there are two pieces of one length and two pieces of a longer or shorter length.
- Students should be able to make the connection that perimeter is the total distance around the rectangle.

Geoboards can be used to find the perimeter of rectangles also. Provide students with different perimeters and have them create the rectangles on the geoboards. Have students share their rectangles with the class. Have discussions about how different rectangles can have the same perimeter with different side lengths.

Students experienced measuring lengths using inches and centimeters in Grade 2. They also related addition to length and wrote equations with a symbol for the unknown to represent a problem.

- Once students know how to find the perimeter of a rectangle, they can find the perimeter of rectangular-shaped objects in their environment.
- They can use appropriate measuring tools to find lengths of rectangular-shaped objects in the classroom.
- Present problems situations involving perimeter, such as finding the amount of fencing needed to enclose a rectangular shaped park, or how much ribbon is needed to decorate the edges of a picture frame.
- Present problem situations in which the perimeter and two or three of the side lengths are known, requiring students to find the unknown side length.

Students need to recognize when a problem situation requires a solution relates to the perimeter or the area and explain how they know.

They should have experience with understanding area concepts when they recognize it as an attribute of plane figures. They should also investigate that when plane figures are covered without gaps by $n$ unit squares, the area of the figure is $n$ square units.
Students need to explore how measurements are affected when one attribute to be measured is held constant and the other is changed. Using square tiles, students can discover that the area of rectangles may be the same, but the perimeter of the rectangles varies. Geoboards can also be used to explore this same concept.

**Resources/Tools:**

Illustrative Mathematics tasks:
- 3.MD Shapes and their Insides

NRICH mathematics
- Area and Perimeter lesson
- All About Area and Perimeter lessons
- Dicey Perimeter and Dicey Area game

Visit K-5 Math Teaching Resources click on Measurement and Data, then on 3rd Grade. Scroll down to 3.MD.8 to access resources specifically for this standard.

**Common Misconceptions:**

Students think that when they are presented with a drawing of a rectangle with only two of the side lengths shown or a problem situation with only two of the side lengths provided, these are the only dimensions they should add to find the perimeter. Encourage students to include the appropriate dimensions on the other sides of the rectangle. With problem situations, encourage students to make a drawing to represent the situation in order to find the perimeter.
Domain: Geometry (G)

◆ **Cluster A: Reason with shapes and their attributes.**

**Standard: 3.G.1**
Understand that shapes in different categories (e.g. rhombuses, rectangles, trapezoids, kites 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. Refer to inclusive definitions noted in the glossary. (3.G.1)

**Suggested Standards for Mathematical Practice (MP):**
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

**Connections:**
This cluster is connected to:
- Reason with shapes and their attributes. (Grade 2.G.1 through 2.G.3)

**Explanation and Examples:**
In second grade, students identify and draw triangles, quadrilaterals, pentagons, and hexagons. Third graders build on this experience and further investigate **quadrilaterals** (technology may be used during this exploration).

Students recognize shapes that are and are not quadrilaterals by examining the properties of the geometric figures. Definitions play a key role in determining if a shape is categorized appropriately or not.

Students conceptualize that a quadrilateral must be a closed figure with four straight sides AND they begin to notice characteristics of the angles and the relationship between opposite sides. Students should be encouraged to provide details and use proper vocabulary when describing the properties of quadrilaterals. They sort geometric figures (see examples below) and identify squares, rectangles, and rhombuses as quadrilaterals.

![Examples of quadrilaterals](image)

Students should classify shapes by attributes and drawing shapes that fit specific categories.
For example, parallelograms include: squares, rectangles, rhombi, or other shapes that have two pairs of parallel sides. Also, the broad category **quadrilaterals** include all types of parallelograms, trapezoids and other four-sided figures.
Example:
Draw a picture of a quadrilateral. Draw a picture of a rhombus.
How are they alike? How are they different?
Is a quadrilateral a rhombus? Is a rhombus a quadrilateral? Justify your thinking.

Instructional Strategies: (3.G.1 through 3.G.2)
In earlier grades, students have experiences with informal reasoning about particular shapes through sorting and classifying using the geometric attributes of the shapes. Students have built and drawn shapes given the number of faces, number of angles and number of sides.

The focus now is on identifying and describing properties of two-dimensional shapes in more precise ways using properties that are shared rather than the appearances of individual shapes. These properties allow for generalizations of all shapes that fit a particular classification.

Development in focusing on the identification and description of shapes’ properties should include examples and non-examples, as well as examples and non-examples of shapes drawn by students in a particular category. For example, students could start with identifying shapes with right angles. An explanation as to why the remaining shapes do not fit this category should be discussed. Students should determine common characteristics of the remaining shapes.
Resources/Tools:
See Geometry Learning Progressions for detailed information:

Georgia Department of Education:
- “3-D Detectives” - Students identify, describe and illustrate plane and solid figures according to geometric properties.
- “What’s In A Name” - Students describe and classify plane figures (triangles, square, rectangle, trapezoid, quadrilateral, pentagon, hexagon, and irregular polygonal shapes) by the number of edges, vertices and angles.

Visit K-5 Math Teaching Resources click on Geometry, then on 3rd Grade. Scroll down to 3.G.1 to access resources specifically for this standard.

NCTM Illuminations – NCTM has many great resources available to educators, some of these resources (i.e. interactives) are open to any educator while others (i.e. lessons) require an individual or institutional membership. If you find that a resource referenced in the flip books requires membership access, check with your school/district to see if they have an institutional membership which would grant you access all NCTM documents. If they do not have a membership, this would be a valuable resource to request.
- Shape Up

Common Misconceptions: (3.G.1 through 3.G.2)
Students may identify a square as a “non-rectangle” or a “non-rhombus” based on limited images they see. They do not recognize that a square is a rectangle. They may list properties of each shape separately, but not see the interrelationships between the shapes. Continually refer students back to the definitions of each of the shape categories. Then ask – Does it fit the definition in all aspects? If it does, then it is in that category.

Use straws to make four congruent figures and have students change the angles to see the relationships between a rhombus and a square. As students develop definitions for these shapes, relationships between the properties will be understood.
Domain: Geometry (G)

◆ **Cluster A: Reason with shapes and their attributes.**

**Standard: 3.G.2**
Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as \( \frac{1}{4} \) of the area of the shape.* (3.G.2)

**Suggested Standards for Mathematical Practice (MP):**
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

**Connections:** See 3.G.1

**Explanation and Examples:**
This standard builds on students’ work with fractions and area. Students are responsible for partitioning shapes into halves, thirds, fourths, sixths and eighths.

**Example:**
These figures are partitioned/divided into four equal parts. Each part is \( \frac{1}{4} \) of the total area of the figure.

![Squares partitioned into fourths](image1)

**Examples:**
This figure was partitioned/divided into four equal parts. Each part is \( \frac{1}{4} \) of the total area of the figure.

![Circle with lines](image2)

Given a shape, students partition it into equal parts, recognizing that these parts all have the same area. They identify the fractional name of each part and are able to partition a shape into parts with equal areas in several different ways.
Given a shape, students partition it into equal parts, recognizing that these parts all have the same area. They identify the fractional name of each part and are able to partition a shape into parts with equal areas in several different ways.

**Learning Progressions:**
*Number & Operations-Fractions 3-5*

**Instructional Strategies:** See 3.G.1.

In Grade 2, students partitioned rectangles into two, three or four equal shares, recognizing that the equal shares need not have the same shape. They described the shares using words such as, halves, thirds, half of, a third of, etc., and described the whole as two halves, three thirds or four fourths.

In Grade 4, students will partition shapes into parts with equal areas (the spaces in the whole of the shape). These equal areas need to be expressed as unit fractions of the whole shape, i.e., describe each part of a shape partitioned into four parts as \( \frac{1}{4} \) of the area of the shape. 2 of the 3 shapes here don’t represent 4 equal parts. Why are they here?

Have students draw different shapes and see how many ways they can partition the shapes into parts with equal area.
Tools/Resources:

Illustrative Mathematics tasks:
- 3.G Geometric pictures of one half
- 3.G Representing Half of a Circle
- 3.MD, 3.G, 3.NF Halves, thirds, and sixths

Visit K-5 Math Teaching Resources click on Geometry, then on 3rd Grade. Scroll down to 3.G.2 to access resources specifically for this standard.
### APPENDIX: TABLE 1. Common Addition and Subtraction Situations

<table>
<thead>
<tr>
<th></th>
<th>Result Unknown</th>
<th>Change Unknown</th>
<th>Start Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Add to</strong></td>
<td>Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?</td>
<td>Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5</td>
<td>Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5</td>
</tr>
<tr>
<td><strong>Taken from</strong></td>
<td>Five apples were on the table. I ate two apples. How many apples are on the table now? 5 − 2 = ?</td>
<td>Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 − ? = 3</td>
<td>Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? − 2 = 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Put Together/Take Apart</strong></th>
<th><strong>Total Unknown</strong></th>
<th><strong>Addend Unknown</strong></th>
<th><strong>Both Addends Unknown</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?</td>
<td>Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 − 3 = ?</td>
<td>Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Compare</strong></th>
<th><strong>Difference Unknown</strong></th>
<th><strong>Bigger Unknown</strong></th>
<th><strong>Smaller Unknown</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(&quot;How many more?&quot; version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? 2 + ? = 5, 5 − 2 = ?</td>
<td>(Version with &quot;more&quot;): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have?</td>
<td>(Version with &quot;more&quot;): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have?</td>
<td></td>
</tr>
<tr>
<td>(&quot;How many fewer?&quot; version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 − 2 = ?</td>
<td>(Version with &quot;fewer&quot;): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?</td>
<td>(Version with &quot;fewer&quot;): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have?</td>
<td></td>
</tr>
</tbody>
</table>

Blue shading indicates the four Kindergarten problem subtypes. Students in grades 1 and 2 work with all subtypes and variants (blue and green). Yellow indicates problems that are the difficult four problem subtypes or variants that students in Grade 1 work with but do not need to master until Grade 2.

1These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.

2Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.

3For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.
### TABLE 2. Common Multiplication and Division Situations

<table>
<thead>
<tr>
<th></th>
<th><strong>Unknown Product</strong></th>
<th><strong>Group Size Unknown</strong> (“How many in each group?” Division)</th>
<th><strong>Number of Groups Unknown</strong> (“How many groups?” Division)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>3 x 6 = ?</strong></td>
<td><strong>3 x ? = 18; 18 ÷ 3 = ?</strong></td>
<td><strong>? x 6 = 18; 18 ÷ 6 = ?</strong></td>
</tr>
</tbody>
</table>

#### Equal Groups
- **There are 3 bags with 6 plums in each bag. How many plums are there in all?**
  - **Measurement example.**
    - You need 3 lengths of string, each 6 inches long. How much string will you need altogether?
  - **Measurement example.**
    - You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?
- **If 18 plums are shared equally into 3 bags, then how many plums will be in each bag?**
  - **Measurement example.**
    - You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
- **If 18 plums are to be packed 6 to a bag, then how many bags are needed?**
  - **Measurement example.**
    - You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?

#### Arrays\(^4\), Area\(^5\)
- **There are 3 rows of apples with 6 apples in each row. How many apples are there?**
  - **Area example.**
    - What is the area of a 3 cm by 6 cm rectangle?
- **If 18 apples are arranged into 3 equal rows, how many apples will be in each row?**
  - **Area example.**
    - A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?
- **If 18 apples are arranged into equal rows of 6 apples, how many rows will there be?**
  - **Area example.**
    - A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?

#### Compare
- **A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost?**
  - **Measurement example.**
    - A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?
- **A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost?**
  - **Measurement example.**
    - A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?
- **A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue hat?**
  - **Measurement example.**
    - A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?

#### General
- **a x b = ?**
  - **a x ? = p, and p ÷ a = ?**
  - **? x b = p, and p ÷ b = ?**

Multiplicative compare problems appear first in Grade 4 (green), with whole number values and with the “times as much” language from the table. In **Grade 5, unit fractions language** such as “one third as much” may be used. Multiplying and unit language change the subject of the comparing sentence (“A red hat costs n times as much as the blue hat” results in the same comparison as “A blue hat is 1/n times as much as the red hat” but has a different subject.)
**Table 3. The Properties of Operations**

<table>
<thead>
<tr>
<th>Name of Property</th>
<th>Representation of Property</th>
<th>Example of Property, Using Real Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Properties of Addition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associative</td>
<td>$(a + b) + c = a + (b + c)$</td>
<td>$(78 + 25) + 75 = 78 + (25 + 75)$</td>
</tr>
<tr>
<td>Commutative</td>
<td>$a + b = b + a$</td>
<td>$2 + 98 = 98 + 2$</td>
</tr>
<tr>
<td>Additive Identity</td>
<td>$a + 0 = a$ and $0 + a = a$</td>
<td>$9875 + 0 = 9875$</td>
</tr>
<tr>
<td>Additive Inverse</td>
<td>For every real number $a$, there is a real number $-a$ such that $a + -a = -a + a = 0$</td>
<td>$-47 + 47 = 0$</td>
</tr>
<tr>
<td><strong>Properties of Multiplication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associative</td>
<td>$(a \times b) \times c = a \times (b \times c)$</td>
<td>$(32 \times 5) \times 2 = 32 \times (5 \times 2)$</td>
</tr>
<tr>
<td>Commutative</td>
<td>$a \times b = b \times a$</td>
<td>$10 \times 38 = 38 \times 10$</td>
</tr>
<tr>
<td>Multiplicative Identity</td>
<td>$a \times 1 = a$ and $1 \times a = a$</td>
<td>$387 \times 1 = 387$</td>
</tr>
<tr>
<td>Multiplicative Inverse</td>
<td>For every real number $a$, $a \neq 0$, there is a real number $\frac{1}{a}$ such that $a \times \frac{1}{a} = \frac{1}{a} \times a = 1$</td>
<td>$\frac{8}{3} \times \frac{3}{8} = 1$</td>
</tr>
<tr>
<td><strong>Distributive Property of Multiplication over Addition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributive</td>
<td>$a \times (b + c) = a \times b + a \times c$</td>
<td>$7 \times (50 + 2) = 7 \times 50 + 7 \times 2$</td>
</tr>
</tbody>
</table>

(Variables $a$, $b$, and $c$ represent real numbers.)

Excerpt from NCTM’s *Developing Essential Understanding of Algebraic Thinking*, grades 3-5 p. 16-17
### TABLE 4. The Properties of Equality

<table>
<thead>
<tr>
<th>Name of Property</th>
<th>Representation of Property</th>
<th>Example of property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflexive Property of Equality</td>
<td>$a = a$</td>
<td>$3,245 = 3,245$</td>
</tr>
<tr>
<td>Symmetric Property of Equality</td>
<td>If $a = b$, then $b = a$</td>
<td>$2 + 98 = 90 + 10$, then $90 + 10 = 2 + 98$</td>
</tr>
<tr>
<td>Transitive Property of Equality</td>
<td>If $a = b$ and $b = c$, then $a = c$</td>
<td>$If 2 + 98 = 90 + 10 \text{ and } 90 + 10 = 52 + 48$ then $2 + 98 = 52 + 48$</td>
</tr>
<tr>
<td>Addition Property of Equality</td>
<td>If $a = b$, then $a + c = b + c$</td>
<td>$If \frac{1}{2} = \frac{2}{4}$, then $\frac{1}{2} + \frac{3}{5} = \frac{2}{4} + \frac{3}{5}$</td>
</tr>
<tr>
<td>Subtraction Property of Equality</td>
<td>If $a = b$, then $a - c = b - c$</td>
<td>$If \frac{1}{2} = \frac{2}{4}$, then $\frac{1}{2} - \frac{1}{5} = \frac{2}{4} - \frac{1}{5}$</td>
</tr>
<tr>
<td>Multiplication Property of Equality</td>
<td>If $a = b$, then $a \times c = b \times c$</td>
<td>$If \frac{1}{2} = \frac{2}{4}$, then $\frac{1}{2} \times \frac{1}{5} = \frac{2}{4} \times \frac{1}{5}$</td>
</tr>
<tr>
<td>Division Property of Equality</td>
<td>If $a = b$ and $c \neq 0$, then $a \div c = b \div c$</td>
<td>$If \frac{1}{2} = \frac{2}{4}$, then $\frac{1}{2} \div \frac{1}{5} = \frac{2}{4} \div \frac{1}{5}$</td>
</tr>
<tr>
<td>Substitution Property of Equality</td>
<td>If $a = b$, then $b$ may be substituted for $a$ in any expression containing $a$.</td>
<td>$If 20 = 10 + 10$ then $90 + 20 = 90 + (10 + 10)$</td>
</tr>
</tbody>
</table>

(Variables $a$, $b$, and $c$ can represent any number in the rational, real, or complex number systems.)
Exactly one of the following is true: $a < b$, $a = b$, $a > b$.

If $a > b$ and $b > c$ then $a > c$.

If $a > b$, then $b < a$.

If $a > b$, then $-a < -b$.

If $a > b$, then $a + c > b + c$.

If $a > b$ and $c > 0$, then $a \times c > b \times c$.

If $a > b$ and $c < 0$, then $a \times c < b \times c$.

If $a > b$ and $c > 0$, then $a \div c > b \div c$.

If $a > b$ and $c < 0$, then $a \div c < b \div c$.

Here $a$, $b$, and $c$ stand for arbitrary numbers in the rational or real number systems.
Beginning—A child can count very small collections (1-4) and understands that the last word tells "how many". Beyond small numbers the number words may be said without the lack of numerical understanding. This is often referred to as rote counting.

Level 1—The child uses one to one correspondence to find the number of objects in two sets. Even if the quantity is known for the first set, the child will start with the first set and continue counting on into the second set. The child begins the count with one. This also connects to Piaget's Hierarchical Inclusion – that in order to have 7 – you have to have 6, 5, 4, etc.

Level 2 – At this level the student begins the counting, starting with the known quantity of the first set and “counts on” from that point in the sequence to establish how many. This method is used to find the total in two sets. This counting is not rote. This level of counting requires several connections between cardinality and counting meanings of the number words.

Level 3 - At this level the student begins using known facts to solve for unknown facts. For example, the student uses “make a ten” where one addend breaks apart to make 10 with another addend or a doubles plus/minus one strategy. Students begin to implicitly use the properties of operations.
The Kansas Math Standards require high-level cognitive demand asking students to demonstrate deeper conceptual understanding through the application of content knowledge and skills to new situations and sustained tasks. For each Assessment Target the depth(s) of knowledge (DOK) that the student needs to bring to the item/task will be identified, using the Cognitive Rigor Matrix shown below.

<table>
<thead>
<tr>
<th>Depth of Thinking (Webb)+ Type of Thinking (Revised Bloom)</th>
<th>DOK Level 1 Recall &amp; Reproduction</th>
<th>DOK Level 2 Basic Skills &amp; Concepts</th>
<th>DOK Level 3 Strategic Thinking &amp; Reasoning</th>
<th>DOK Level 4 Extended Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remember</td>
<td>Evaluate an expression</td>
<td>Specify, explain relationships</td>
<td>Use concepts to solve non-routine problems</td>
<td>Relate mathematical concepts to other content areas, other domains</td>
</tr>
<tr>
<td></td>
<td>Locate points on a grid or number on number line</td>
<td>Make basic inferences or logical predictions from data/observations</td>
<td>Use supporting evidence to justify conjectures, generalize, or connect ideas</td>
<td>Develop generalizations of the results obtained and the strategies used and apply them to new problem situations</td>
</tr>
<tr>
<td></td>
<td>Solve a one-step problem</td>
<td>Use models/diagrams to explain concepts</td>
<td>Explain reasoning when more than one response is possible</td>
<td>Initiate, design, and conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results</td>
</tr>
<tr>
<td></td>
<td>Represent math relationships in words, pictures, or symbols</td>
<td>Make and explain estimates</td>
<td>Explain phenomena in terms of concepts</td>
<td>Analyze multiple sources of evidence or data sets</td>
</tr>
<tr>
<td>Understand</td>
<td>Follow simple procedures</td>
<td>Select a procedure and perform it</td>
<td>Design investigation for a specific purpose or research question</td>
<td>Analyze the content across data or sources of evidence or data sets</td>
</tr>
<tr>
<td></td>
<td>Calculate, measure, apply a rule (e.g., rounding)</td>
<td>Solve routine problem applying multiple concepts or decision points</td>
<td>Use reasoning, planning, and supporting evidence</td>
<td>Apply understanding in a novel way, provide argument or justification for the new application</td>
</tr>
<tr>
<td></td>
<td>Apply algorithm or formula</td>
<td>Retrieve information to solve a problem</td>
<td>Translate between problem &amp; symbolic notation when not a direct translation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solve linear equations</td>
<td>Translate between representations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make conversions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply</td>
<td>Retrieve information from a table or graph to answer a question</td>
<td>Categorize data, figures</td>
<td>Compare information within or across data sets or texts</td>
<td>Analyze the content across data or sources of evidence or data sets</td>
</tr>
<tr>
<td></td>
<td>Identify a pattern/trend</td>
<td>Organize, order data</td>
<td>Analyze and draw conclusions from data, citing evidence</td>
<td>Apply understanding in a novel way, provide argument or justification for the new application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select appropriate graph and organize &amp; display data</td>
<td>Generalize a pattern</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interpret data from a simple graph</td>
<td>Interpret data from complex graph</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extend a pattern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyze</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Create</td>
<td>Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept</td>
<td>Generate conjectures or hypotheses based on observations or prior knowledge and experience</td>
<td>Develop an alternative solution</td>
<td>Synthesize information across multiple sources or data sets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Design a model to inform and solve a practical or abstract situation</td>
</tr>
</tbody>
</table>
References, Resources, and Links

6. engageNY Modules: http://www.engageny.org/mathematics
7. Focus by Grade Level, Content Emphases by Jason Zimba: http://achievethecore.org/page/774/focus-by-grade-level
33. NRICH enriching mathematics website. [https://nrich.maths.org/](https://nrich.maths.org/)
35. Publishers Criteria: [www.corestandards.org](http://www.corestandards.org)
Social Studies Curriculum
Standard 1: Choices have consequences.
   Benchmark:
   1.1 The student will recognize and evaluate significant choices made by individuals, communities, states, and nations that have impacted our lives and futures.
   1.2 The student will analyze the context under which choices are made and draw conclusions about the motivations and goals of the decision makers.
   1.3 The student will investigate examples of causes and consequences of particular choices and connect those choices with contemporary issues.
   1.4 The student will use his/her understanding of choices and consequences to construct a decision-making process and to justify a decision.

Standard 2: Individuals have rights and responsibilities.
   Benchmark:
   2.1 The student will recognize and evaluate the rights and responsibilities of people living in societies.
   2.2 The student will analyze the context under which significant rights and responsibilities are defined and demonstrated, their various interpretations, and draw conclusions about those interpretations.
   2.3 The student will investigate specific rights and responsibilities of individuals and connect those rights and responsibilities with contemporary issues.
   2.4 The student will use his/her understanding of rights and responsibilities to address contemporary issues.

Standard 3: Societies are shaped by beliefs, ideas, and diversity.
   Benchmark:
   3.1 The student will recognize and evaluate significant beliefs, contributions, and ideas of the many diverse peoples and groups and their impact on individuals, communities, states, and nations.
   3.2 The student will draw conclusions about significant beliefs, contributions, and ideas, analyzing the origins and context under which these competing ideals were reached and the multiple perspectives from which they come.
   3.3 The student will investigate specific beliefs, contributions, ideas, and/or diverse populations and connect those beliefs, contributions, ideas and/or diversity to contemporary issues.
   3.4 The student will use his/her understanding of those beliefs, contributions, ideas, and diversity to justify or define how community, state, national, and international ideals shape contemporary society.

Standard 4: Societies experience continuity and change over time.
   Benchmark:
   4.1 The student will recognize and evaluate continuity and change over time and its impact on individuals, institutions, communities, states, and nations.
   4.2 The student will analyze the context of continuity and change and the vehicles of reform, drawing conclusions about past change and potential future change.
4.3 The student will investigate an example of continuity and/or change and connect that continuity and/or change to a contemporary issue.

4.4 The student will use his/her understanding of continuity and change to construct a model for contemporary reform.

**Standard 5: Relationships among people, places, ideas, and environments are dynamic.**

**Benchmark:**

5.1 The student will recognize and evaluate dynamic relationships that impact lives in communities, states, and nations.

5.2 The student will analyze the context of significant relationships and draw conclusions about a contemporary world.

5.3 The student will investigate the relationship among people, places, ideas, and/or the environment and connect those relationships to contemporary issues.

5.4 The student will use his/her understanding of these dynamic relationships to create a personal, community, state, and/or national narrative.

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**Historical Thinking Skills**

*(a synthesis of the literature)*

To think critically like a historian, a student must:

1. Establish historical significance of an event (Levesque, 2008; Phillips, 2002);
   a. Importance: what was of primary influence or concern for those alive at the time,
   b. Profundity: concerns how deeply people were/have been affected by the event;
   c. Quantity: refers to the number of people affected by the event;
   d. Durability: refers to how long people were affected by the event
   e. Relevance: refers to the extent in which the event contributes to historical understanding

2. Use and evaluate primary source evidence (SHEG, 2017):
   a. Sourcing: determine who wrote it, when, where, why, to whom, reliability, perspective, purpose;
   b. Contextualization: determine what was happening at the time the source was created, understand how the context impacts its analysis;
   c. Corroboration: establish what is probable by comparing documents and recognizing disparities;
   d. Close reading: identify and evaluate an author’s argument, identify and evaluate evidence used to support the argument.

3. Identify continuity and change: looking beyond individual events to see if change occurred while looking for underlying continuities where we initially only see change;

4. Analyze cause and effect: shows that an event in question wasn’t a matter of chance; shows intersection of various phenomena in short and long term; multi-layered, not linear;

5. Take historical perspectives: sometimes called “historical empathy” perspective-taking goes a step further by recognizing social, cultural, intellectual differences of various groups of people in the present and past; and,

6. Understand the ethical dimension of historical interpretations by ensuring historians do not impose their own judgments on the past using a contemporary lens on controversial events (“presentism”) until after the context of the event has been investigated.
Community

This course focuses on the concept of “community,” through the major social studies disciplines of history, geography, economics, and civics/government. The four disciplines should be totally integrated in this course. The goal is for students to understand the concept of “community” as a framework for studying various course topics. In conjunction, students will gain an understanding of a sense of place. The course should be rigorous and relevant with instruction that integrates thinking skills, historical processes, and content so that students are able to apply their learning to their own lives. Instruction should include the integration of concepts and principles from history, economics, geography, civics, and the humanities.

Units

Units in third grade may be taught in any order but the integration of units is encouraged. Each unit should be taught with some consideration of all four social studies disciplines.

- History
- Civics/Government
- Geography
- Economics

Standards

1. Choices have consequences.
2. Individuals have rights and responsibilities.
3. Societies are shaped by beliefs, idea, and diversity.
4. Societies experience continuity and change over time.
5. Relationships between people, place, idea, and environments are dynamic.

Connecting with Best Practices and Literacy Expectations

It is the process of applying foundational knowledge, not rote memorization of content, which prepares students for the 21st century. It is vital that Kansas K-12 students acquire the ability to analyze, interpret, evaluate, and communicate at high levels. These discipline-specific process skills are best learned through integrating them into the content of the third grade.

The skills are more clearly articulated in the Benchmarks and Best Practices and Literacy Expectations and reflect the influence of the Kansas College and Career Ready Standards for English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects (KCCRS), often referred to as the Common Core. It is this nuanced balance of process skills, historical, and social science foundational knowledge, and the KCCRS that best prepares students for college, career, and citizenship.
State assessments will focus on the Standards and Benchmarks, not specific content. The following Instructional Narrative and Content Outline may be used as a grade level scope and sequence to assist in the planning of lessons and units. But it should be remembered that during this planning, emphasis must be placed on the “doing” of social studies rather than simple acquisition of content knowledge.

As they prepare to teach Community in third grade social studies course, teachers should review the Profile of the 21st Century Learner and the Kansas Social Emotional and Character Development Model Standards endorsed by the Kansas State Board of Education.

Connecting with Past Learning

Students should possess a general understanding of their personal history (sense of self) and their family history. Students should be able to identify the major symbols that represent Kansas and the United States. They should be able to understand the concept of the past, having studied then and now in the second grade. Students should be able to understand the related concepts of change over time and cause and effect. Students should have experience with identifying and asking questions of primary sources to make observations and inferences.

Connecting with Future Learning

The skills and content taught in third grade will be used as background and prior knowledge for future pursuits in the discipline. In fourth grade students will use their understanding of community as a link to state and regional characteristics and in fifth grade, with early national history. The study of government and geography in third grade provides skills of comparative analysis needed for the sixth grade course in ancient civilizations and the seventh grade course in world geography. In third grade students will examine their local communities in order to provide a sense of place from which to examine Kansas history through the social studies themes in seventh grade. Critical components of their experience in this social studies course should include: reading, writing, speaking, and listening about their community, characteristics of communities, and personal development as a community member. Students should also be able to recognize, evaluate, analyze the context, investigate, construct, create, and problem-solve specific topics in order to draw conclusions or parallels between those topics and others.

Instructional Narrative and Content Outline

A strong foundational knowledge of content is an essential part of creating a democratic citizen capable of critical thinking. To develop this foundational knowledge, experienced teachers of social studies would include, but not be limited to, the following as part of a high-quality instructional design.

This narrative and outline is intended to assist in unit design and to provide a uniform, comprehensive guide for instruction. It is not intended to be a state-mandated curriculum for how and when content is taught. The outline is not a list of required items and so was developed with the understanding that content often overlaps. Because of this overlap, it may seem as if important ideas, people, places, and events are missing from this outline. It would be impossible for students to learn, for example, about physical characteristics of a place without also learning about landforms, bodies of water, climate, soils, natural vegetation, animal life, etc., which do not appear in this outline.
This also means that the outline could be amended in ways that best fits the instructional needs of students. Changes should maintain the integrity of the outline’s scope and sequence.

The third grade course focuses on building the concept of community through the major social studies disciplines of history, geography, economics, and civics/government. Each of the course’s four units listed below has an emphasis in one of these major strands but classroom instruction should integrate other strands as appropriate to help the students build on and apply knowledge to refine their thinking and problem solving skills.

**History (H)**

In this unit, students will recognize and evaluate the significant people and events that shaped their home town and/a major city in Kansas, and other cities of the world. They will analyze how these people and events contributed to the way the citizens of their town/city and citizens of other metropolitan areas are perceived and function today. Students will understand the motivation and accomplishments of notable individuals, particularly early settlers, entrepreneurs, and civic and cultural leaders specific to their home town. They will analyze the impact of experiences of groups of people who have contributed to the development of towns/cities. They will analyze the experiences of groups of people who have made historical and cultural contributions to their community and compare it with other communities. Students will investigate the significance of events, holidays and ceremonies that are important to their community.

<table>
<thead>
<tr>
<th>Ideas</th>
<th>natural resources, customs, culture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People/Roles</strong></td>
<td>civic, political, cultural leaders, settlers, and entrepreneurs in your community, ethnic groups</td>
</tr>
<tr>
<td><strong>Places/Institutions</strong></td>
<td>home town, community, landmarks, historic sites</td>
</tr>
<tr>
<td><strong>Events</strong></td>
<td>settlement of your community, historical events in your community, and holidays</td>
</tr>
</tbody>
</table>

**Skills**

- Create and use timeline
- 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. (KCCRS RI3.3)
- Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade three topic or subject area. (KCCRS RI3.4)
- Compare and contrast the most important points and key details presented in two texts on the same topic. (KCCRS RI3.9)
- Conduct short research projects that build knowledge about a topic. (KCCRS W3.7)
- 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. (KCCRS SL3.4)
- Locates credible information from a variety of sources
- Uses information to frame important historical questions
- Identifies and compares information from primary and secondary sources
Third Grade 2013

- Evaluates events from multiple perspectives

Sample Compelling Questions

- Why do people choose to live in your community? (Standard 1)
- What are your rights and responsibilities as a citizen of your community (Standard 2)
- How do different customs and cultural traditions shape your community? (Standard 3)
- How has your community changed over time? (Standard 4)
- What drives population shifts in your community? (Standard 5)

Civics/Government (CG)

In this unit, students will recognize and evaluate the rights and responsibilities of citizens. Students will examine their role as citizens of the community. They will determine how people can participate in government and analyze why choosing to participate is important. Students will investigate ways that responsible citizens can fulfill their civic duty such as by engaging in one or more of the following opportunities: serving the common good, being law abiding, showing respect for others, volunteering, serving the public in an elected or appointed office, and/or joining the military.

Public services, rule of law, and shared ideals are the foundations that guide the structure and function of government. In this unit students will examine the services provided by local governments. They will describe the types, characteristics, and services of political units, such as city, county, state, and country. Students will investigate the function of local governments. They will recognize that all towns/cities in the United States have laws, and all citizens have equal rights and responsibilities as set forth in both the state and U.S. Constitution. Students will define the rule of law as it applies to individuals, family, school, and local governments. Students will recognize and evaluate the shared ideals in the United States, such as the right to vote and freedom of religion and speech.

Ideas
- rules, laws, society, civic values, civic duties, government, beliefs, needs, rights, responsibilities, common good, constitution, justice, duty

People/Roles
- citizen, leaders, police, mayor, governor, president

Places/Institutions
- community, school, municipal government, city hall, public libraries

Events
- elections, jury duty, community service, local holidays

Skills

- Seek opportunities and demonstrate characteristics of a leader such as being trustworthy, fair-minded, and forward-looking.
- Demonstrate good citizenship skills such as showing respect, being responsible, having a positive attitude, exercising self-discipline, and engaging in conflict resolution.
• Identify common problems or needs within your school or community and participate and persevere in problem solving.
• Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-lead) with diverse partners on grade three topics and texts, building on others ideas and expressing their own clearly (KCCRS SL.3.1)
• Follow agreed upon rules of discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics, and text under discussion). (KCCRS SL.3.1b)

Sample Compelling Questions

• What are the consequences of choosing to be an active member of your community? (Standard 1)
• Why do communities need rules/laws? (Standard 2)
• Who in your community decides what rules/laws are made and followed? (Standard 3)
• Can laws in your community be changed? (Standard 4)
• What makes someone a good citizen in your community? (Standard 5)

Geography (G)

In this unit, students will investigate settlement patterns to draw conclusions about a sense of place, first in their community and then in relation to other cities. Students will compare and contrast the citizens in their community with those of another city in the context of their geographic, cultural, political and social characteristics. Then students will recognize and evaluate the importance of a prominent immigrant group in their community. They will examine the causes and consequences of the immigrant group’s choice of settlement location, investigate its economic and cultural contributions to their town/city, and compare that Kansas settlement with immigrant settlements in other cities. Students will investigate the human characteristics of the citizens of their own and other communities around the world, such as languages, customs, and food. Students will recognize the consequences of people living in a community and how it impacts that environment over time and conversely how the physical environment impacts human activity in their community. They will analyze how communities interact, using their community as the model.

In this unit, students will learn how to use geographic tools and location to analyze the influence of physical features on decision making. Students will use maps, graphic representations, tools, and technologies to locate, use, and present information about people, places, and environments. They will identify major landforms, bodies of water, and natural resources in Kansas and the world (including oceans and continents). They will distinguish physical features and political features of a map. Students will identify and compare the location, climate and ecosystems of their town/city to others in the world. They will compare characteristics among rural, suburban, and urban communities, such as, types of housing, agricultural activities, fuel consumption, recreation population density, and jobs.

Ideas

- concept of mapping, political characteristics, physical characteristics, natural resources, human characteristics, ecosystem, climate, culture, customs, human/environmental interaction

People/ Roles

- cartographers, immigrants
**Third Grade 2013**

**Places/Institutions**
- Political places (e.g., city boundary, county, city offices, county seat), community, physical features (e.g., oceans, continents), physical characteristics of the local community (e.g., landforms, bodies of water, natural resources, weather, and seasons) urban (e.g., Los Angeles, New York City, Denver, Chicago), suburban, rural areas, nation, neighboring cities.

**Events**
- Human modification of the earth, immigration.

**Skills**
- Read maps to analyze city locations for hemisphere (e.g., equator and Prime Meridian) and climate (e.g., tropic temperate or arctic).
- Create a map that includes title, symbols, legend, compass rose, cardinal directions, grid system, measurement/scale.
- Read maps of your community to problem-solve.
- Observe, explore, and compare human and physical characteristics of your community.
- Describe human characteristics of your community with another community.
- Identify major bodies of land and water.
- Distinguish between a globe and a map.
- Demonstrate mental mapping skills.

**Sample Compelling Questions**
- What significant choices have been made by your community that impacted your life and future? (Standard 1)
- Why should people be good stewards of their environment? (Standard 2)
- What does your community need to remain vital? (Standard 3)
- How has your community stayed the same and how has it changed over time? (Standard 4)
- What important physical and human characteristics create the identity of your community? (Standard 5)

**Economic (E)**

In this unit students will recognize that limited resources require people to make choices to satisfy their wants for goods and services. Students will examine how a market economy works in their community through buyers and sellers exchanging goods and services. They will examine the reason for economic specialization and how that leads to trade between communities. Students will describe how a market economy works and consider the role the economy has on travel between communities. They will understand that when borrowing money the consumer is receiving credit that must be repaid. Students will explore what goods and services in their community are paid for by taxes. They will consider how people’s wants and needs are met through spending and saving decisions. Students will explore the consequences of borrowing and lending.

**Ideas**
- Limited resources, abundant resources, natural and human resources, goods, services, market economy, economic
specialization, borrowing, lending, credit, spending, saving, wants, needs, costs, taxes, opportunity cost

**People/Roles**
consumer, producer, spender, saver, lender, investor

**Places/Institutions**
community, town/city, local businesses, tax and non-tax supported institutions

**Events**
production and consumption of goods and services

**Skills**
- Explain how location impacts supply and demand.
- Analyze costs and benefits of decisions in your community
- Evaluate the personal benefits of saving and spending, borrowing and lending
- Determine opportunity cost
- Solve problems and justify the decision

**Sample Compelling Questions**
- What are the costs and benefits of spending and saving? (Standard 1)
- What shared responsibilities in your community are met through taxes? (Standard 2)
- How is resource use in your community impacted by beliefs and ideas of the people who live there? (Standard 3)
- How have goods and services in your community changed over time? (Standard 4)
- What resources are abundant in your community, are limited in your community, and how does this influence the decisions the community makes? (Standard 5)
3rd Grade Social Studies

Community
3rd Grade Social Studies Curriculum

Effective Instruction Promotes

Reading a variety of primary and secondary sources so that it is possible to
- Determine the meaning and main idea, identifying and analyzing evidence, relationships, and supporting details.
- Interpret words, discipline-specific phrases, analyze text structure, and identify purpose, bias, and point of view.
- Evaluate an argument or claim citing evidence in support of, or against, the argument or claim.
- Analyze two or more texts on the same topic drawing conclusions about the similarities and differences.
- Comprehend complex and difficult text within the discipline.
- Identify and evaluate critical information communicated in multiple forms of media.

Writing clearly and coherently
- To support a claim, or make an argument using evidence, logic, and reasoning.
- To inform or explain an event, relationship, position, or opinion.
- To tell a story.
- So that each example is open to revision and rewriting.
- By applying the appropriate technologies for the purpose and audience.
- By gathering multiple sources of information and integrating them into short and long term projects.

Communicating effectively by
- Preparing and collaborating with diverse partners in conversations about topics within the discipline
- Evaluating information from various formats.
- Presenting information and evaluation to others in a manner that is not totally written text.
- Gathering and organizing information and evidence.
- Designing and delivering a presentation on a specific topic.
- Using multiple modes of communication and adjusting presentations to meet the requirements of the task or audience.

Effective Instruction includes:
- Multiple perspectives and disciplines
- Multiple causes and consequences
- Use of primary sources
- Authentic intellectual work
- Higher order thinking
- Literacy within the Social Studies
- Multiple means of communication
- Research and construction of knowledge

from the 2013 Kansas Standards for History, Government, and Social Studies (HGSS)
# 3rd Grade Social Studies Curriculum

## Social Studies Standards:
1. Choices have consequences.
2. Individuals have rights and responsibilities.
3. Societies are shaped by beliefs, ideas, and diversity.
4. Societies experience continuity and change over time.
5. Relationships among people, places, and environments are dynamic.

## History Benchmark:
The student 1) recognizes and evaluates, 2) analyzes the context and draws conclusions, 3) investigates examples and connects with contemporary issues, and 4) constructs/creates and justifies/defends claims related to the standards through the lens of history.

## Essential questions:
How important is location to a community? How have people shaped your community? Is your community more alike or more different than other communities? Has your community changed more or stayed the same more over time? How do choices people make impact their communities? How do communities interact with each other? Are you a reflection of your community?

## History Indicators

<table>
<thead>
<tr>
<th>The student:</th>
<th>Skills, Concepts, and Content</th>
<th>Teaching Strategies and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSH3.1</td>
<td>Describes the relationship between historical events as it pertains to time, sequence, cause, and effect.</td>
<td>Identifies historical events that are connected to each other. (4.1)</td>
</tr>
<tr>
<td></td>
<td>SSH3.2 Constructs a narrative time line of United States history using prior knowledge and that learned during the school year.</td>
<td>Synthesizes time lines and analyzes how the events shaped the United States, Kansas City, Lenexa, Overland Park, or Olathe history. (4.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resources: SSA Lesson 4 Settling in the United States SSA Lesson 6 Making Communities Better SSA Lesson 8 Understanding Our Economy SSA Lesson 13 Government in the United States</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resources: SSA Lesson 5 Diversity in the United States</td>
</tr>
</tbody>
</table>

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### 3rd Grade Social Studies Curriculum

| SSH3.3 Understands the progression and significance of historical events in the context of our community's historical narrative. | SSA Lesson 8 Understanding Our Economy  
**Additional Resources:**  
*Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books*  
**Compelling questions:**  
How do local landmarks and historic sites reflect a society and its people? (Standard 3)  
**Resources:**  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
**Additional Resources:**  
*Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books*  
*Olathe: The City Beautiful film series – available on DVD in school media centers/supporting resources available online* |
|---|---|
| • Relates a brief overview of Kansas City Metropolitan history. (4.1)  
• Recognizes Kansas City landmarks and historic sites and describes their significance. (4.2, 3.2)  
• Recognizes local (Olathe, Overland Park, Lenexa) landmarks and historic sites and describes their significance. (4.2, 3.2) |  
**Compelling questions:**  
How do local landmarks and historic sites reflect a society and its people? (Standard 3)  
**Resources:**  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
**Additional Resources:**  
*Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books*  
*Olathe: The City Beautiful film series – available on DVD in school media centers/supporting resources available online* |
| SSH3.4 Analyzes the impact of people who have contributed to the development of the local community. |  
**Compelling questions:**  
Who were significant people who helped shape the history of our local area? (Standard 3)  
How did influential people affect local historical events? (Standard 5)  
**Resources:**  
SSA Lesson 4 Settling in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 9 Choices in a Free Market  
SSA Lesson 13 Government in the United States  
**Additional Resources:**  
*Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books*  
*Olathe: The City Beautiful film series – available on DVD in school media centers/supporting resources available online* |
| • Generates questions about individuals and groups who have shaped significant historic changes and continuities in the community. (4.3)  
• Discusses the push-pull reasons that motivate people to move to a new land. (4.2) |  
**Compelling questions:**  
Who were significant people who helped shape the history of our local area? (Standard 3)  
How did influential people affect local historical events? (Standard 5)  
**Resources:**  
SSA Lesson 4 Settling in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 9 Choices in a Free Market  
SSA Lesson 13 Government in the United States  
**Additional Resources:**  
*Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books*  
*Olathe: The City Beautiful film series – available on DVD in school media centers/supporting resources available online* |
| SSH3.5 Summarizes how different kinds of historical sources are used to explain events in the past. |  
**Compelling questions:**  
How do historical sources reflect the beliefs, ideas, and diversity at that time? (Standard 3)  
What do primary sources communicate about people, places, and the environment? (Standard 5)  
**Resources:**  
SSA Lesson 1 Understanding the Geography of the World  
SSA Lesson 4 Settling in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 9 Choices in a Free Market  
SSA Lesson 13 Government in the United States  
**Additional Resources:**  
*Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books*  
*Olathe: The City Beautiful film series – available on DVD in school media centers/supporting resources available online* |
| • Compares and contrasts primary and secondary sources. (4.1)  
• Analyzes documents and pictures from the past. (4.2)  
• Utilizes a variety of resources and sources materials such as online information, and texts to explain events. (4.2) |  
**Compelling questions:**  
How do historical sources reflect the beliefs, ideas, and diversity at that time? (Standard 3)  
What do primary sources communicate about people, places, and the environment? (Standard 5)  
**Resources:**  
SSA Lesson 1 Understanding the Geography of the World  
SSA Lesson 4 Settling in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 9 Choices in a Free Market  
SSA Lesson 13 Government in the United States  
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*Olathe: The City Beautiful film series – available on DVD in school media centers/supporting resources available online* |

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### SSH3.6 Identifies and compares information from primary and secondary sources.
- Retells the history of the community using local documents or artifacts. (4.2)
- Recognizes that a document reflects one moment in a changing past (contextualization). (4.2)
- Uses context/background information to draw more meaning from documents (contextualization). (4.2)
- Infers historical context from documents (contextualization). (4.2)

**Compelling questions:**
- How do the local documents and artifacts retell history? (Standard 3)
- How do sources reflect continuity and change over time in the local community? (Standard 4)

**Resources:**
- SSA Lesson 1 Understanding the Geography of the World
- SSA Lesson 2 Finding Places in the United States
- SSA Lesson 4 Settling in the United States
- SSA Lesson 5 Diversity in the United States
- SSA Lesson 7 Cultures Around the World

**Online**
- [Understanding Clues From the Past](#)

### SSH3.7 Explains probable causes and effects of events and developments.
- Understands Kansas City and local history. (4.1)
- Knows basic background history of the three major trails through Kansas. (4.1)
- Recognizes Lewis and Clark and their contribution to settling Kansas. (4.2)

**Compelling questions:**
- What were the consequences as a result of settling in Kansas City, Lenexa, Overland Park, and Olathe? (Standard 1)
- How has the Kansas City area changed over time? (Standard 4)
- What were the consequences of Lewis & Clark’s exploration? (Standard 1)
- How did Lewis and Clark’s exploration change the Kansas City area? (Standard 4)

**Resources:**
- SSA Lesson 4 Settling in the United States
- SSA Lesson 8 Understanding Our Economy

### SSH3.8 Uses evidence to develop a claim about the past.
- Understands what primary and secondary sources are. (4.1)
- Analyzes information and documents about Kansas City and Overland Park, Lenexa, or Olathe history. (4.2)
- Compares and contrasts documents for supporting evidence. (4.2)

**Compelling questions:**
- What documents depict the history of our local area? (Standard 4)
- What does the evidence say about the development of Kansas City, Overland Park, Lenexa, and Olathe? (Standard 4)
- What does evidence reveal about the beliefs or ideas about the past? (Standard 3)

**Resources:**
- SSA Lesson 2 Finding Places in the United States
- SSA Lesson 4 Settling in the United States

**Additional Resources:**
- *Learning About Olathe, Learning About Overland Park, and Learning About Lenexa* books
- *Olathe: The City Beautiful* film series – available on DVD in school media centers/supporting resources available online
<table>
<thead>
<tr>
<th>3rd Grade Social Studies Curriculum</th>
<th>Compelling questions:</th>
<th>Resources:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSH3.9 Summarizes the central claim in a secondary work of history, (close reading)</td>
<td>How does the author's claim describe society and people of the time? (Standards 3 &amp; 4)</td>
<td>SSA Lesson 1 Understanding the Geography of the World SSA Lesson 12 Providing Public Services SSA Lesson 13 Government in the United States</td>
</tr>
<tr>
<td>SSH3.10 Identifies and evaluates the author's purpose in producing a document, (giving)</td>
<td>How compelling is the author's purpose in the document? (close reading) (4.2)</td>
<td>SSA Lesson 1 Understanding the Geography of the World SSA Lesson 6 Making Communities Better SSA Lesson 13 Government in the United States</td>
</tr>
<tr>
<td>SSH3.11 Corroborates information found in accounts of the same event, (corroboration)</td>
<td>How do two accounts of the same event demonstrate the diversity of beliefs and ideas about the event? (Standard 3)</td>
<td>SSA Lesson 1 Understanding the Geography of the World SSA Lesson 13 Government in the United States</td>
</tr>
</tbody>
</table>

**Compelling questions:**
- How compelling is the author's purpose in the document? (close reading) (4.2)
- How do two accounts of the same event demonstrate the diversity of beliefs and ideas about the event? (Standard 3)

**Resources:**
- SSA Lesson 1 Understanding the Geography of the World
- SSA Lesson 6 Making Communities Better
- SSA Lesson 13 Government in the United States

**Additional Resources:**
- Learning About Olathe: Learning About Olathe, Learning About Overland Park, and Learning About Lenexa books
- Olathe: The City Beautiful film series – available on DVD in school media centers
- Supporting resources available online
# 3rd Grade Social Studies Curriculum

**Social Studies Standards:**
1. Choices have consequences.
2. Individuals have rights and responsibilities.
3. Societies are shaped by beliefs, ideas, and diversity.
4. Societies experience continuity and change over time.
5. Relationships among people, places, and environments are dynamic.

**Civics/Government Benchmark:** The student 1) recognizes and evaluates, 2) analyzes the context and draws conclusions, 3) investigates examples and connects with contemporary issues, and 4) constructs/creates and justifies/defends claims related to the standards through the lens of civics and government.

**Essential questions:** How important is location to a community? How have people shaped your community? Is your community more alike or more different than other communities? Has your community changed more or stayed the same more over time? How do choices people make impact their communities? How do communities interact with each other? Are you a reflection of your community?

<table>
<thead>
<tr>
<th>Civics/Government Indicators</th>
<th>Skills, Concepts, and Content</th>
<th>Teaching Strategies and Resources</th>
</tr>
</thead>
</table>
| SSC3.1 Distinguishes the responsibilities and powers of government officials at various levels and branches of government and in different times and places. | • Identifies/understands the various levels of government (local, county, state, national). (2.1)  
• Identifies the three branches of government. (2.1)  
• Investigates the function and services of local governments. (2.2)  
• Compares and contrasts state leaders to national leaders. (2.2)  
• Compares and contrasts heads of state from different countries. (2.2, 3.2) | Compelling questions:  
How do decisions at the national level affect the state level? (Standards 1 & 5)  
How do decisions of other countries affect our country? (Standards 1 & 5)  
Why do we need 3 different branches of government? (Standard 5)  
How are national and state governments alike and different? (Standard 2)  
How do other countries govern their people? (Standard 3) |
| SSC3.2 Investigates ways that responsible citizens fulfill their civic duty. | • Provides examples of responsible citizenship such as serving the common good, being law-abiding, showing respect for others, volunteering, serving the public in an elected or appointed office, and/or joining the military. (2.1)  
• Determines how people can participate in government. (2.2)  
• Analyzes why choosing to participate is important (voting, expressing requests and needs to community leaders) (2.2) | Compelling questions:  
How are a citizen’s views represented in government? (e.g. voting) (Standard 3)  
What are the rights and responsibilities of citizens? (Standard 2)  
How can citizens participate in their government? (Standard 2)  
What are the consequences of not being a responsible citizen? (Standard 1)  
Why do people pay taxes? (Standard 2) |
| Resources: | SSA Lesson 12 Providing Public Services  
SSA Lesson 13 Government in the United States  
SSA Lesson 15 Protecting the Environment  
SSA Lesson 16 Making a Difference in the World  
(see also the Learning About Olathe, Lenexa, and Overland Park books) | SSA Lesson 4 Settling in the United States  
SSA Lesson 6 Making Communities Better  
SSA Lesson 12 Providing Public Services  
SSA Lesson 13 Government in the United States |
### 3rd Grade Social Studies Curriculum

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<table>
<thead>
<tr>
<th>SSC3.3 Recognizes that the Constitution is a written plan for the rules of government.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understands how laws are created and enforced. (Standards 2, 4, 5)</td>
</tr>
<tr>
<td>Compelling questions:</td>
</tr>
<tr>
<td>Why do the Constitution and laws change? (Standards 2, 4, 5)</td>
</tr>
<tr>
<td>How do people change rules and laws? (Standards 2, 4, 5)</td>
</tr>
<tr>
<td>Resources:</td>
</tr>
<tr>
<td>SSA Lesson 17 Understanding Laws (Standards 4)</td>
</tr>
<tr>
<td>SSA Lesson 15 Protecting the Environment</td>
</tr>
<tr>
<td>SSA Lesson 16 Making a Difference in the World</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SSSC.4 Describes how community government works to solve community problems. (Standards 2, 3, 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzes the costs and benefits of a community decision. (Standards 2, 3, 5)</td>
</tr>
<tr>
<td>Compelling questions:</td>
</tr>
<tr>
<td>How do the government services provided by local government differ from those provided by national or state government? (Standard 5)</td>
</tr>
<tr>
<td>How does a community government decide how to spend tax money? (Standard 5)</td>
</tr>
<tr>
<td>Resources:</td>
</tr>
<tr>
<td>SSA Lesson 6 Making Communities Better</td>
</tr>
<tr>
<td>SSA Lesson 12 Providing Public Services</td>
</tr>
<tr>
<td>SSA Lesson 13 Government in the United States</td>
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<tr>
<td>SSA Lesson 15 Protecting the Environment</td>
</tr>
<tr>
<td>SSA Lesson 16 Making a Difference in the World</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SSSC.5 Explains how rules and laws change society and how people change rules and laws.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizes the importance of rules in a society. (Standard 2)</td>
</tr>
<tr>
<td>Compelling questions:</td>
</tr>
<tr>
<td>What is the difference between rules and laws? (Standards 2 &amp; 5)</td>
</tr>
<tr>
<td>How does the process of creating laws differ from the process of creating rules? (Standard 2)</td>
</tr>
<tr>
<td>Resources:</td>
</tr>
<tr>
<td>SSA Lesson 13 Government in the United States</td>
</tr>
<tr>
<td>SSA Lesson 15 Protecting the Environment</td>
</tr>
<tr>
<td>SSA Lesson 16 Making a Difference in the World</td>
</tr>
</tbody>
</table>
3rd Grade Social Studies Curriculum

Social Studies Standards:
1. Choices have consequences.
2. Individuals have rights and responsibilities.
3. Societies are shaped by beliefs, ideas, and diversity.
4. Societies experience continuity and change over time.
5. Relationships among people, places, and environments are dynamic.

Geography Benchmark: The student 1) recognizes and evaluates, 2) analyzes the context and draws conclusions, 3) investigates examples and connects with contemporary issues, and 4) constructs/creates and justifies/defends claims related to the standards through the lens of geography.

Essential questions: How important is location to a community? How have people shaped your community? Is your community more alike or more different than other communities? Has your community changed more or stayed the same more over time? How do choices people make impact their communities? How do communities interact with each other? Are you a reflection of your community?

<table>
<thead>
<tr>
<th>Geography Indicators</th>
<th>Skills, Concepts, and Content</th>
<th>Teaching Strategies and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSG3.1 Applies geographic tools to construct and interpret maps.</td>
<td></td>
<td>Compelling questions: How can one use technology to interpret or construct maps? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>• Uses technology, satellite images, and photographs. (5.3)</td>
<td>Resources:</td>
</tr>
<tr>
<td></td>
<td>• Includes grid systems, symbols, legends, scales, and compass rose.(5.4)</td>
<td>SSA Lesson 1 Understanding the Geography of the World</td>
</tr>
<tr>
<td></td>
<td>• Demonstrates mental mapping skills. (5.4)</td>
<td>SSA Lesson 2 Finding Places in the United States</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSA Lesson 3 Geography and the Way We Live</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSA Lesson 4 Settling in the United States</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSA Lesson 6 Making Communities Better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSA Lesson 11 The United States and Global Trade</td>
</tr>
<tr>
<td>SSG3.2 Identifies the physical characteristics of the local community.</td>
<td></td>
<td>Compelling questions: How the land influence people’s beliefs and ideas about the world? (Standard 3)</td>
</tr>
<tr>
<td></td>
<td>• Identifies major landforms and bodies of water in the world, including oceans and continents. (5.1)</td>
<td>How does the place you live relate to the world community? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>• Differentiates between home (address), city, county, state, country, and continent. (5.1)</td>
<td>How do the political and physical features of a community contribute to daily life? (Standards 4 &amp; 5)</td>
</tr>
<tr>
<td></td>
<td>• Locates major political and physical map features. (5.1)</td>
<td>Resources:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSA Lesson 1 Understanding the Geography of the World</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSA Lesson 2 Finding Places in the United States</td>
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<tr>
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<td>SSA Lesson 3 Geography and the Way We Live</td>
</tr>
</tbody>
</table>

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### 3rd Grade Social Studies Curriculum

| SSG3.3 Identifies ways in which humans impact the environment and how the environment affects human activities in their community. | SSA Lesson 4 Setting in the United States  
SSA Lesson 11 The United States and Global Trade  
SSA Lesson 16 Making a Difference in the World |
<table>
<thead>
<tr>
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<tbody>
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</tr>
</tbody>
</table>
- Identifies how the environment impacts human choices regarding types of housing, fuel consumption, agricultural activities, jobs, and resource availability. (5.2)  
- Examines how peoples’ ability to reuse and recycle can help their community. (5.3)  
- Identifies ways people can protect the environment. (5.2) |
| **Compelling questions:**  
What are the consequences of misusing resources? (Standard 1)  
What are ways people can help their community protect the environment? (Standard 5) |
| **Resources:**  
SSA Lesson 2 Finding Places in the United States  
SSA Lesson 3 Geography and the Way We Live  
SSA Lesson 4 Setting in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 6 Making Communities Better  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 11 The United States and Global Trade  
SSA Lesson 15 Protecting the Environment  
SSA Lesson 16 Making a Difference in the World |
| **Online**  
Historic Places in Kansas (Tallgrass Prairie) Read Kansas! cards |

| SSG3.4 Investigates settlement patterns to draw conclusions about a sense of place, first in his/her community and then in relation to another community. | SSA Lesson 2 Finding Places in the United States  
SSA Lesson 3 Geography and the Way We Live  
SSA Lesson 4 Setting in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 15 Protecting the Environment  
SSA Lesson 16 Making a Difference in the World |
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<tbody>
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</tbody>
</table>
- Investigates customs, language, food, music, art, etc. in their own and other communities. (3.3)  
- Observes, explores, and compares/contrasts human and physical characteristics of their community with another community. (5.3) |
| **Compelling questions:**  
How do the customs, language, food, etc. shape a community? (Standards 3 & 4)  
How are the people, places, and customs of one community similar or different from another? (Standard 5) |
| **Resources:**  
SSA Lesson 2 Finding Places in the United States  
SSA Lesson 3 Geography and the Way We Live  
SSA Lesson 4 Setting in the United States  
SSA Lesson 5 Diversity in the United States  
SSA Lesson 7 Cultures Around the World  
SSA Lesson 15 Protecting the Environment  
SSA Lesson 16 Making a Difference in the World |
| **Online**  
I Live in Kansas and Holidays in Kansas Read Kansas! cards available in your media center or online through the Kansas State Historical Society |
### Social Studies Standards:
1. Choices have consequences.
2. Individuals have rights and responsibilities.
3. Societies are shaped by beliefs, ideas, and diversity.
4. Societies experience continuity and change over time.
5. Relationships among people, places, and environments are dynamic.

### Economics Benchmark:
The student 1) recognizes and evaluates, 2) analyzes the context and draws conclusions, 3) investigates examples and connects with contemporary issues, and 4) constructs/creates and justifies/defends claims related to the standards through the lens of economics.

### Essential questions:
- How important is location to a community?
- How have people shaped your community?
- Is your community more alike or more different than other communities?
- Has your community changed more or stayed the same more over time?
- How do choices people make impact their communities?
- How do communities interact with each other?
- Are you a reflection of your community?

### Economics Indicators

<table>
<thead>
<tr>
<th>SSE3.1 Explains the role of money in making exchanges.</th>
<th>Skills, Concepts, and Content</th>
<th>Compelling questions:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>How can one person make a difference by making good decisions about money? (Standard 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How has technology changed how money is exchanged? (Standard 4)</td>
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</tr>
</tbody>
</table>

### SSE3.2 Understands that when borrowing money the consumer is receiving credit that must be repaid.
- Defines credit, loan, and interest. (1.1)
- Knows that credit must be repaid. (1.2)

### SSE3.3 Understands the variety of resources that are used to produce goods and services.
- Identifies human, capital, and natural resources that are used to produce goods and services. (5.1)
- Recognizes the difference between human, capital, and natural resources. (5.1)

### Teaching Strategies and Resources
(Formative and summative classroom assessments are included in each Social Studies Alive lesson. Social studies is not assessed at the district or state level)
### 3rd Grade Social Studies Curriculum

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Resources</th>
<th>Compelling questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSE3.4</td>
<td>Understands the reason for economic specialization and how that leads to trade between communities.</td>
<td>SSA Lesson 3 Geography and the Way We Live, SSA Lesson 11 The United States and Global Trade</td>
<td>How do people in a community depend on one another? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>- Defines specialization and its impact on a community. (5.1)</td>
<td></td>
<td>How do people use trade between communities? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>- Describes how specialization is driven by a community's needs or resources. (5.2)</td>
<td></td>
<td>What could our community specialize in? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>- Explains how location impacts supply and demand. (5.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Explains how location affects the types of products produced in an area. (5.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSE3.5</td>
<td>Explains how profits influence sellers in markets.</td>
<td>SSA Lesson 3 Geography and the Way We Live, SSA Lesson 11 The United States and Global Trade</td>
<td>How has the continued influence of technology changed how people buy and sell? (Standard 4)</td>
</tr>
<tr>
<td></td>
<td>- Defines profit. (1.1, 5.1)</td>
<td></td>
<td>How do goods and services affect businesses and the economy? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>- Lists typical expenses of a business. (1.1, 5.1)</td>
<td></td>
<td>What steps do businesses go through before bringing a product to the market? (Standard 1)</td>
</tr>
<tr>
<td></td>
<td>- Identifies how profits can change a business and what product they are producing. (1.2, 4.2, 5.2)</td>
<td></td>
<td>How can a business grow? (Standard 1)</td>
</tr>
<tr>
<td></td>
<td>- Describes how people who own businesses work to make their business grow by selling more things and employing more people. (1.2, 4.2, 5.2)</td>
<td></td>
<td>How does supply and demand affect a community? (Standard 5)</td>
</tr>
<tr>
<td></td>
<td>- Defines supply and demand. (5.1)</td>
<td></td>
<td>How does supply and demand impact individuals? (Standards 1 &amp; 5)</td>
</tr>
<tr>
<td></td>
<td>- Understands the effect of supply and demand in a community. (5.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Science Curriculum
Third Grade

The performance expectations in third grade help students formulate answers to questions such as: “What is typical weather in different parts of the world and during different times of the year? How can the impact of weather-related hazards be reduced? How do organisms vary in their traits? How are plants, animals, and environments of the past similar or different from current plants, animals, and environments? What happens to organisms when their environment changes? How do equal and unequal forces on an object affect the object? How can magnets be used?” Third grade performance expectations include PS2, LS1, LS2, LS3, LS4, ESS2, and ESS3 Disciplinary Core Ideas from the NRC Framework. Students are able to organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. Students are expected to develop an understanding of the similarities and differences of organisms’ life cycles. An understanding that organisms have different inherited traits, and that the environment can also affect the traits that an organism develops, is acquired by students at this level. In addition, students are able to construct an explanation using evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. Students are expected to develop an understanding of types of organisms that lived long ago and also about the nature of their environments. Third graders are expected to develop an understanding of the idea that when the environment changes some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. Students are able to determine the effects of balanced and unbalanced forces on the motion of an object and the cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. They are then able to apply their understanding of magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concepts of patterns; cause and effect; scale, proportion, and quantity; systems and system models; interdependence of science, engineering, and technology; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the third grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in asking questions and defining problems; developing and using models, planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.
3. Forces and Interactions

Students who demonstrate understanding can:

3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.] [Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.]

3-PS2-2. Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]

3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.* [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

Science and Engineering Practices

<table>
<thead>
<tr>
<th>Asking Questions and Defining Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.</td>
</tr>
<tr>
<td>- Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3)</td>
</tr>
<tr>
<td>- Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)</td>
</tr>
</tbody>
</table>

Planning and Carrying Out Investigations

| Planning and carrying out investigations to answer questions or test solutions on problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. |
| - Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-PS2-1) |
| - Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (3-PS2-2) |

Disciplinary Core Ideas

<table>
<thead>
<tr>
<th>PS2.A: Forces and Motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) (3-PS2-1)</td>
</tr>
<tr>
<td>The patterns of an object’s motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) (3-PS2-2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PS2.B: Types of Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects in contact exert forces on each other. (3-PS2-1)</td>
</tr>
<tr>
<td>Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3),(3-PS2-4)</td>
</tr>
</tbody>
</table>

Crosscutting Concepts

<table>
<thead>
<tr>
<th>Patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Patterns of change can be used to make predictions. (3-PS2-2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cause and Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cause and effect relationships are routinely identified. (3-PS2-1)</td>
</tr>
<tr>
<td>- Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-3)</td>
</tr>
</tbody>
</table>

Connections to Nature of Science

<table>
<thead>
<tr>
<th>Science Knowledge is Based on Empirical Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science findings are based on recognizing patterns. (3-PS2-2)</td>
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</table>

<table>
<thead>
<tr>
<th>Scientific Investigations Use a Variety of Methods</th>
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<tbody>
<tr>
<td>Science investigations use a variety of methods, tools, and techniques. (3-PS2-1)</td>
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</tbody>
</table>

Connections to other DCIs in third grade: N/A

Articulation of DCIs across grade-levels:

- **KPS2.A** (3-PS2-1); **KPS2.B** (3-PS2-1); **KPS2.C** (3-PS2-1); **KETS2A** (3-PS2-2); **1ESS1A** (3-PS2-2); **1PS2A** (3-PS2-2); **1PS2B** (3-PS2-2); **2PS2A** (3-PS2-2); **2PS2B** (3-PS2-2); **3PS2A** (3-PS2-2); **3PS2B** (3-PS2-2); **3PS2C** (3-PS2-2); **4PS2A** (3-PS2-2); **4PS2B** (3-PS2-2); **4PS2C** (3-PS2-2); **5PS2A** (3-PS2-2); **5PS2B** (3-PS2-2); **5PS2C** (3-PS2-2); **6PS2A** (3-PS2-2); **6PS2B** (3-PS2-2); **6PS2C** (3-PS2-2); **7PS2A** (3-PS2-2); **7PS2B** (3-PS2-2); **7PS2C** (3-PS2-2); **8PS2A** (3-PS2-2); **8PS2B** (3-PS2-2); **8PS2C** (3-PS2-2); **9PS2A** (3-PS2-2); **9PS2B** (3-PS2-2); **9PS2C** (3-PS2-2); **10PS2A** (3-PS2-2); **10PS2B** (3-PS2-2); **10PS2C** (3-PS2-2); **11PS2A** (3-PS2-2); **11PS2B** (3-PS2-2); **11PS2C** (3-PS2-2); **12PS2A** (3-PS2-2); **12PS2B** (3-PS2-2); **12PS2C** (3-PS2-2);

Common Core State Standards Connections:

**ELA/Literacy -**

| RI.3.1 | Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1), (3-PS2-3) |
| RI.3.3 | 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. (3-PS2-3) |
| RI.3.8 | Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence). (3-PS2-3) |
| W.3.7 | Conduct short research projects that build knowledge about a topic. (3-PS2-1), (3-PS2-2) |
| W.3.8 | Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2) |
| SL.3.3 | Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3) |

**Mathematics -**

| MP.2 | Reason abstractly and quantitatively. (3-PS2-1) |
| MP.5 | Use appropriate tools strategically. (3-PS2-1) |
| 3MD.A.2 | 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. (3-PS2-1) |

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

# 3-PS2-1 Motion and Stability: Forces and Interactions

Students who demonstrate understanding can:

**3-PS2-1.** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.] [Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

## Science and Engineering Practices

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.

## Disciplinary Core Ideas

**PS2.A: Forces and Motion**
- Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.)

**PS2.B: Types of Interactions**
- Objects in contact exert forces on each other.

## Crosscutting Concepts

**Cause and Effect**
- Cause and effect relationships are routinely identified.

### Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1. Identifying the phenomenon under investigation</th>
<th>2. Identifying the evidence to address the purpose of the investigation</th>
<th>3. Planning the investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Students identify and describe* the phenomenon under investigation, which includes the effects of different forces on an object’s motion (e.g., starting, stopping, or changing direction).</td>
<td>a. Students collaboratively develop an investigation plan. In the investigation plan, students describe* the data to be collected, including:</td>
<td>a. In the collaboratively developed investigation plan, students describe* how the motion of the object will be observed and recorded, including defining the following features:</td>
</tr>
<tr>
<td>b. Students describe* the purpose of the investigation, which includes producing data to serve as the basis for evidence for how balanced and unbalanced forces determine an object’s motion.</td>
<td>i. The change in motion of an object at rest after:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Different strengths and directions of balanced forces (forces that sum to zero) are applied to the object.</td>
<td>i. The object whose motion will be investigated.</td>
</tr>
<tr>
<td></td>
<td>2. Different strengths and directions of unbalanced forces (forces that do not sum to zero) are applied to the object (e.g., strong force on the right, weak force on the left).</td>
<td></td>
</tr>
</tbody>
</table>
ii. The objects in contact that exert forces on each other.

iii. Changing one variable at a time (e.g., control strength and vary the direction, or control direction and vary the strength).

iv. The number of trials that will be conducted in the investigation to produce sufficient data.

b Students individually describe how their investigation plan will allow them to address the purpose of the investigation.

<table>
<thead>
<tr>
<th>4 Collecting the data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Students collaboratively collect and record data according to the investigation plan they developed, including data from observations and/or measurements of:</td>
</tr>
<tr>
<td>i. An object at rest and the identification of the forces acting on the object.</td>
</tr>
<tr>
<td>ii. An object in motion and the identification of the forces acting on the object.</td>
</tr>
</tbody>
</table>
# 3-PS2-2 Motion and Stability: Forces and Interactions

Students who demonstrate understanding can:

3-PS2-2. Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a seesaw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and Carrying Out Investigations</td>
<td>PS2.A: Forces and Motion</td>
<td>Patterns</td>
</tr>
<tr>
<td>Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.</td>
<td>The patterns of an object’s motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)</td>
<td>Patterns of change can be used to make predictions.</td>
</tr>
</tbody>
</table>

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### Observables of student performance by the end of the grade:

<table>
<thead>
<tr>
<th>Observable</th>
<th>Details</th>
</tr>
</thead>
</table>
| 1 Identifying the phenomenon under investigation | a From the given investigation plan, students identify and describe* the phenomenon under investigation, which includes observable patterns in the motion of an object.  
   b Students identify and describe* the purpose of the investigation, which includes providing evidence for an explanation of the phenomenon that includes the idea that patterns of motion can be used to predict future motion of an object. |
| 2 Identifying the evidence to address the purpose of the investigation | a Based on a given investigation plan, students identify and describe* the data to be collected through observations and/or measurements, including data on the motion of the object as it repeats a pattern over time (e.g., a pendulum swinging, a ball moving on a curved track, a magnet repelling another magnet).  
   b Students describe* how the data will serve as evidence of a pattern in the motion of an object and how that pattern can be used to predict future motion. |
| 3 Planning the investigation | a From the given investigation plan, students identify and describe* how the data will be collected, including how:  
   i. The motion of the object will be observed and measured.  
   ii. Evidence of a pattern in the motion of the object will be identified from the data on the motion of the object.  
   iii. The pattern in the motion of the object can be used to predict future motion. |
| 4 Collecting the data | a Students make observations and/or measurements of the motion of the object, according to the given investigation plan, to identify a pattern that can be used to predict future motion. |
3-PS2-3 Motion and Stability: Forces and Interactions

Students who demonstrate understanding can:

3-PS2-3. **Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.** [Clarification Statement: Examples of electric forces could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of magnetic forces could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
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<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking Questions and Defining Problems</td>
<td>PS2.B: Types of Interactions</td>
<td>Cause and Effect</td>
</tr>
<tr>
<td>Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.</td>
<td>• Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.</td>
<td>• Cause and effect relationships are routinely identified, tested, and used to explain change.</td>
</tr>
<tr>
<td>• Ask questions that can be investigated based on patterns such as cause and effect relationships.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Observable features of the student performance by the end of the grade:**

1. **Addressing phenomena of the natural world**
   a. Students ask questions that arise from observations of two objects not in contact with each other interacting through electric or magnetic forces, the answers to which would clarify the cause-and-effect relationships between:
      i. The sizes of the forces on the two interacting objects due to the distance between the two objects.
      ii. The relative orientation of two magnets and whether the force between the magnets is attractive or repulsive.
      iii. The presence of a magnet and the force the magnet exerts on other objects.
      iv. Electrically charged objects and an electric force.

2. **Identifying the scientific nature of the question**
   a. Students’ questions can be investigated within the scope of the classroom.
### 3-PS2-4 Motion and Stability: Forces and Interactions

Students who demonstrate understanding can:

3-PS2-4. **Define a simple design problem that can be solved by applying scientific ideas about magnets.** [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
<thead>
<tr>
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<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking Questions and Defining Problems</td>
<td>PS2.B: Types of Interactions</td>
<td>- Connections to Engineering, Technology, and Applications of Science</td>
</tr>
<tr>
<td>Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.</td>
<td>• Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.</td>
<td>• Interdependence of Science, Engineering, and Technology</td>
</tr>
<tr>
<td>• Define a simple problem that can be solved through the development of a new or improved object or tool.</td>
<td></td>
<td>• Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.</td>
</tr>
</tbody>
</table>

#### Observable features of the student performance by the end of the grade:

1. **Identifying the problem to be solved**
   a. Students identify and describe* a simple design problem that can be solved by applying a scientific understanding of the forces between interacting magnets.
   b. Students identify and describe* the scientific ideas necessary for solving the problem, including:
      i. Force between objects do not require that those objects be in contact with each other
      ii. The size of the force depends on the properties of objects, distance between the objects, and orientation of magnetic objects relative to one another.

2. **Defining the criteria and constraints**
   a. Students identify and describe* the criteria (desirable features) for a successful solution to the problem.
   b. Students identify and describe* the constraints (limits) such as:
      i. Time.
      ii. Cost.
      iii. Materials.
3. Interdependent Relationships in Ecosystems

Students who demonstrate understanding can:

3-LS2-1. Construct an argument that some animals form groups that help members survive.

3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.]

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K–12 Science Education*:

**Science and Engineering Practices**

Analyzing and Interpreting Data

- Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.
  - Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)

Engaging in Argument from Evidence

- Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds.
  - Construct an argument with evidence, data, and/or a model. (3-LS2-1)
  - Construct an argument with evidence. (3-LS4-3)
  - Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4)

**Disciplinary Core Ideas**

**LS2.C: Ecosystem Dynamics, Functioning, and Resilience**

- When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)

**LS2.D: Social Interactions and Group Behavior**

- Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (Note: Moved from K–2 to 3-LS2-1)

**LS4.A: Evidence of Common Ancestry and Diversity**

- Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: Moved from K–2) (3-LS4-1)
- Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)

**LS4.C: Adaptation**

- For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

**LS4.D: Biodiversity and Humans**

- Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-3)

**Crosscutting Concepts**

**Cause and Effect**

- Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1), (3-LS4-3)

**Scale, Proportion, and Quantity**

- Observable phenomena exist from very short to very long time periods. (3-LS4-1)

**Systems and System Models**

- A system can be described in terms of its components and their interactions. (3-LS4-4)

Connections to Engineering, Technology, and Applications of Science

**Interdependence of Science, Engineering, and Technology**

- Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)

Connections to Nature of Science

**Scientific Knowledge Assumes an Order and Consistency in Natural Systems**

- Science assumes consistent patterns in natural systems. (3-LS4-1)

**Common Core State Standards Connections:**

**ELA/Literacy -**

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1), (3-LS4-1), (3-LS4-3), (3-LS4-4)

RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1), (3-LS4-3), (3-LS4-4)

W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1), (3-LS4-1), (3-LS4-3), (3-LS4-4)

W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-1), (3-LS4-3), (3-LS4-4)

W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)

SL.3.4 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. (3-LS4-3), (3-LS4-4)

**Mathematics -**

MP.2 Reason abstractly and quantitatively. (3-LS4-1), (3-LS4-3), (3-LS4-4)

MP.4 Model with mathematics. (3-LS2-1), (3-LS4-1), (3-LS4-3), (3-LS4-4)

MP.5 Use appropriate tools strategically. (3-LS4-1)

3.NBT Number and Operations in Base Ten (3-LS2-1)

3.MD.B.3 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. (3-LS4-3)

3.MD.B.4 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. (3-LS4-1)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. The section entitled “Disciplinary Core Ideas” is reproduced verbatim from *A Framework for K-12 Science Education: Practices, Cross-Cutting Concepts, and Core Ideas*. Integrated and reprinted with permission from the National Academy of Sciences.*
### 3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:

3-LS2-1. **Construct an argument that some animals form groups that help members survive.**

The performance expectation above was developed using the following elements from the NRC document *A Framework for K–12 Science Education*:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaging in Argument from Evidence</td>
<td>LS2.D: Social Interactions and Group Behavior</td>
<td>Cause and Effect</td>
</tr>
<tr>
<td>Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).</td>
<td>• Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size <em>(Note: Moved from K–2).</em></td>
<td>• Cause and effect relationships are routinely identified and used to explain change.</td>
</tr>
<tr>
<td>• Construct an argument with evidence, data, and/or a model.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1</th>
<th>Supported claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students make a claim to be supported about a phenomenon. In their claim, students include the idea that some animals form groups and that being a member of that group helps each member survive.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Identifying scientific evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students describe* the given evidence, data, and/or models necessary to support the claim, including:</td>
</tr>
<tr>
<td>i.</td>
<td>Identifying types of animals that form or live in groups of varying sizes.</td>
</tr>
<tr>
<td>ii.</td>
<td>Multiple examples of animals in groups of various sizes:</td>
</tr>
<tr>
<td>1.</td>
<td>Obtaining more food for each individual animal compared to the same type of animal looking for food individually.</td>
</tr>
<tr>
<td>2.</td>
<td>Displaying more success in defending themselves than those same animals acting alone.</td>
</tr>
<tr>
<td>3.</td>
<td>Making faster or better adjustments to harmful changes in their ecosystem than would those same animals acting alone.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Evaluating and critiquing evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students evaluate the evidence to determine its relevance, and whether it supports the claim that being a member of a group has a survival advantage.</td>
</tr>
<tr>
<td>b</td>
<td>Students describe* whether the given evidence is sufficient to support the claim and whether additional evidence is needed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>Reasoning and synthesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students use reasoning to construct an argument connecting the evidence, data and/or models to the claim. Students describe* the following reasoning in their argument:</td>
</tr>
<tr>
<td>i.</td>
<td>The causal evidence that being part of a group can have the effect of animals being more successful in obtaining food, defending themselves, and coping with change supports the claim that being a member of a group helps animals survive.</td>
</tr>
<tr>
<td>ii.</td>
<td>The causal evidence that an animal losing its group status can have the effect of the animal obtaining less food, not being able to defend itself, and not being able to cope with change supports the claim that being a member of a group helps animals survive.</td>
</tr>
</tbody>
</table>
3-LS4-1 Biological Evolution: Unity and Diversity

Students who demonstrate understanding can:
3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.]

The performance expectation above was developed using the following elements from the NRC document A Framework for K-12 Science Education:

<table>
<thead>
<tr>
<th>Analyzing and Interpreting Data</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</td>
<td>LS4.A: Evidence of Common Ancestry and Diversity</td>
<td></td>
</tr>
<tr>
<td>• Analyze and interpret data to make sense of phenomena using logical reasoning.</td>
<td>• Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.</td>
<td></td>
</tr>
</tbody>
</table>

Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1 Organizing data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Students use graphical displays (e.g., table, chart, graph) to organize the given data, including data about:</td>
</tr>
<tr>
<td>i. Fossils of animals (e.g., information on type, size, type of land on which it was found).</td>
</tr>
<tr>
<td>ii. Fossils of plants (e.g., information on type, size, type of land on which it was found).</td>
</tr>
<tr>
<td>iii. The relative ages of fossils (e.g., from a very long time ago).</td>
</tr>
<tr>
<td>iv. Existence of modern counterparts to the fossilized plants and animals and information on where they currently live.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 Identifying relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Students identify and describe* relationships in the data, including:</td>
</tr>
<tr>
<td>i. That fossils represent plants and animals that lived long ago.</td>
</tr>
<tr>
<td>ii. The relationships between the fossils of organisms and the environments in which they lived (e.g., marine organisms, like fish, must have lived in water environments).</td>
</tr>
<tr>
<td>iii. The relationships between types of fossils (e.g., those of marine animals) and the current environments where similar organisms are found.</td>
</tr>
<tr>
<td>iv. That some fossils represent organisms that lived long ago and have no modern counterparts.</td>
</tr>
<tr>
<td>v. The relationships between fossils of organisms that lived long ago and their modern counterparts.</td>
</tr>
<tr>
<td>vi. The relationships between existing animals and the environments in which they currently live.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 Interpreting data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Students describe* that:</td>
</tr>
<tr>
<td>i. Fossils provide evidence of organisms that lived long ago but have become extinct (e.g., dinosaurs, mammoths, other organisms that have no clear modern counterpart).</td>
</tr>
<tr>
<td>ii. Features of fossils provide evidence of organisms that lived long ago and of what types of environments those organisms must have lived in (e.g., fossilized seashells indicate shelled organisms that lived in aquatic environments).</td>
</tr>
</tbody>
</table>
### 3-LS4-3 Biological Evolution: Unity and Diversity

Students who demonstrate understanding can:

**3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.** [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

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<thead>
<tr>
<th>Science and Engineering Practices</th>
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<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engaging in Argument from Evidence</strong></td>
<td>LS4.C: Adaptation</td>
<td><strong>Cause and Effect</strong></td>
</tr>
<tr>
<td>Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).</td>
<td>• For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.</td>
<td>• Cause and effect relationships are routinely identified and used to explain change.</td>
</tr>
<tr>
<td>• Construct an argument with evidence.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Observable features of the student performance by the end of the grade:

<table>
<thead>
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<th>Supported claims</th>
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<tbody>
<tr>
<td>a</td>
<td>Students make a claim to be supported about a phenomenon. In their claim, students include the idea that in a particular habitat, some organisms can survive well, some can survive less well, and some cannot survive at all.</td>
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</table>

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<tr>
<th>2</th>
<th>Identifying scientific evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students describe* the given evidence necessary for supporting the claim, including:</td>
</tr>
<tr>
<td></td>
<td>i. Characteristics of a given particular environment (e.g., soft earth, trees and shrubs, seasonal flowering plants).</td>
</tr>
<tr>
<td></td>
<td>ii. Characteristics of a particular organism (e.g., plants with long, sharp leaves; rabbit coloration).</td>
</tr>
<tr>
<td></td>
<td>iii. Needs of a particular organism (e.g., shelter from predators, food, water).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Evaluating and critiquing evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students evaluate the evidence to determine:</td>
</tr>
<tr>
<td></td>
<td>i. The characteristics of organisms that might affect survival.</td>
</tr>
<tr>
<td></td>
<td>ii. The similarities and differences in needs among at least three types of organisms.</td>
</tr>
<tr>
<td></td>
<td>iii. How and what features of the habitat meet the needs of each of the organisms (i.e., the degree to which a habitat meets the needs of an organism).</td>
</tr>
<tr>
<td></td>
<td>iv. How and what features of the habitat do not meet the needs of each of the organisms (i.e., the degree to which a habitat does not meet the needs of an organism).</td>
</tr>
<tr>
<td>b</td>
<td>Students evaluate the evidence to determine whether it is relevant to and supports the claim.</td>
</tr>
<tr>
<td>c</td>
<td>Students describe* whether the given evidence is sufficient to support the claim, and whether additional evidence is needed.</td>
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<table>
<thead>
<tr>
<th>4</th>
<th>Reasoning and synthesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students use reasoning to construct an argument, connecting the relevant and appropriate evidence to the claim, including describing* that any particular environment meets different organisms’ needs to different degrees due to the characteristics of that environment and the needs of the organisms. Students describe* a chain of reasoning in their argument, including the following cause-and-effect relationships:</td>
</tr>
<tr>
<td></td>
<td>i. If an environment fully meets the needs of an organism, that organism can survive well within that environment.</td>
</tr>
<tr>
<td></td>
<td>ii. If an environment partially meets the needs of an organism, that organism can survive less well (e.g., lower survival rate, increased sickness, shorter lifespan) than organisms whose needs are met within that environment.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>iii.</td>
<td>If an environment does not meet the needs of the organism, that organism cannot survive within that environment.</td>
</tr>
<tr>
<td>iv.</td>
<td>Together, the evidence suggests a causal relationship within the system between the characteristics of a habitat and the survival of organisms within it.</td>
</tr>
</tbody>
</table>
### 3-LS4-4 Biological Evolution: Unity and Diversity

Students who demonstrate understanding can:

3-LS4-4. **Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.** [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

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<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaging in Argument from Evidence</td>
<td>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</td>
<td>Systems and System Models</td>
</tr>
<tr>
<td>Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).</td>
<td>• When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary)</td>
<td>• A system can be described in terms of its components and their interactions.</td>
</tr>
<tr>
<td>• Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.</td>
<td>LS4.D: Biodiversity and Humans</td>
<td>Connections to Engineering, Technology, and Applications of Science</td>
</tr>
<tr>
<td></td>
<td>• Populations live in a variety of habitats, and change in those habitats affects the organisms living there.</td>
<td>Interdependence of Engineering, Technology, and Science on Society and the Natural World</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Knowledge of relevant scientific concepts and research findings is important in engineering.</td>
</tr>
</tbody>
</table>

**Observable features of the student performance by the end of the grade:**

<table>
<thead>
<tr>
<th>1</th>
<th>Supported claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students make a claim about the merit of a given solution to a problem that is caused when the environment changes, which results in changes in the types of plants and animals that live there.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Identifying scientific evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students describe* the given evidence about how the solution meets the given criteria and constraints. This evidence includes:</td>
</tr>
<tr>
<td>i.</td>
<td>A system of plants, animals, and a given environment within which they live before the given environmental change occurs.</td>
</tr>
<tr>
<td>ii.</td>
<td>A given change in the environment.</td>
</tr>
<tr>
<td>iii.</td>
<td>How the change in the given environment causes a problem for the existing plants and animals living within that area.</td>
</tr>
<tr>
<td>iv.</td>
<td>The effect of the solution on the plants and animals within the environment.</td>
</tr>
<tr>
<td>v.</td>
<td>The resulting changes to plants and animals living within that changed environment, after the solution has been implemented.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Evaluating and critiquing evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students evaluate the solution to the problem to determine the merit of the solution. Students describe* how well the proposed solution meets the given criteria and constraints to reduce the impact of the problem created by the environmental change in the system, including:</td>
</tr>
<tr>
<td>i.</td>
<td>How well the proposed solution meets the given criteria and constraints to reduce the impact of the problem created by the environmental change in the system, including:</td>
</tr>
<tr>
<td>1.</td>
<td>How the solution makes changes to one part (e.g., a feature of the environment) of the system, affecting the other parts of the system (e.g., plants and animals).</td>
</tr>
<tr>
<td>2.</td>
<td>How the solution affects plants and animals.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>b</td>
<td>Students evaluate the evidence to determine whether it is relevant to and supports the claim.</td>
</tr>
<tr>
<td>c</td>
<td>Students describe* whether the given evidence is sufficient to support the claim, and whether additional evidence is needed.</td>
</tr>
</tbody>
</table>
3.1 Inheritance and Variation of Traits: Life Cycles and Traits

Students who demonstrate understanding can:

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.]

3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]

3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

Science and Engineering Practices
Developing and Using Models
Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
- Develop models to describe phenomena. (3-LS1-1)

Analyzing and Interpreting Data
Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations.
- When possible and feasible, digital tools should be used.
- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1)

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
- Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2)
- Use evidence (e.g., observations, patterns) to construct an explanation. (3-LS4-2)

Disciplinary Core Ideas

LS1.B: Growth and Development of Organisms
- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)

LS3.A: Inheritance of Traits
- Many characteristics of organisms are inherited from their parents. (3-LS3-1)
- Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)

LS3.B: Variation of Traits
- Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)
- The environment also affects the traits that an organism develops. (3-LS3-2)

LS4.B: Natural Selection
- Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)

Crosscutting Concepts

Patterns
- Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS1-1)
- Patterns of change can be used to make predictions. (3-LS1-1)

Cause and Effect
- Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2),(3-LS4-2)

Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence
- Science findings are based on recognizing patterns. (3-LS1-1)

Articulation of DCIs across grade-levels:

**1.LS3.A** (3-LS3-1),(3-LS4-2); **1.LS3.B** (3-LS3-1); **MS.LS1.A** (3-LS1-1), (3-LS3-2); **MS.LS1.B** (3-LS1-1), (3-LS3-2); **MS.LS2.A** (3-LS4-2); **MS.LS3.A** (3-LS1-1), (3-LS3-2); **MS.LS3.B** (3-LS1-1), (3-LS3-2); **LS4.B** (3-LS4-2)

Common Core State Standards Connections:

**ELA/Literacy -**
- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring specifically to the text as the basis for the answers. (3-LS3-1),(3-LS3-2),(3-LS4-2)
- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1),(3-LS3-2),(3-LS4-2)
- **RI.3.3** 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. (3-LS3-1),(3-LS3-2),(3-LS4-2)
- **RI.3.7** 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). (3-LS1-1)
- **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1),(3-LS3-2),(3-LS4-2)
- **SL.3.4** 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. (3-LS3-1),(3-LS3-2),(3-LS4-2)
- **SL.3.5** 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. (3-LS1-1)

**Mathematics -**
- **MP.2** Reason abstractly and quantitatively. (3-LS3-1),(3-LS3-2),(3-LS4-2)
- **MP.4** Model with mathematics. (3-LS1-1),(3-LS3-1),(3-LS3-2),(3-LS4-2)
- **3.NBT** Number and Operations in Base Ten (3-LS1-1)
- **3.NF** Number and Operations—Fractions (3-LS1-1)
- **3.MD.B.3** 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. (3-LS4-2)
- **3.MD.B.4** 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. (3-LS1-1),(3-LS3-2)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. The section entitled “Disciplinary Core Ideas” is reproduced verbatim from A Framework for K-12 Science Education: Practices, Cross-Cutting Concepts, and Core Ideas. Integrated and reprinted with permission from the National Academy of Sciences."
3-LS1-1  From Molecules to Organisms: Structures and Processes

Students who demonstrate understanding can:

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.]

The performance expectation above was developed using the following elements from the NRC document A Framework for K-12 Science Education:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing and Using Models</td>
<td>LS1.B: Growth and Development of Organisms</td>
<td>Patterns</td>
</tr>
<tr>
<td>Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.</td>
<td>• Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.</td>
<td>• Patterns of change can be used to make predictions.</td>
</tr>
<tr>
<td>• Develop models to describe phenomena.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connections to Nature of Science

• Science findings are based on recognizing patterns.

Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1 Components of the model</th>
<th>2 Relationships</th>
<th>3 Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Students develop models (e.g., conceptual, physical, drawing) to describe* the phenomenon. In their models, students identify the relevant components of their models including:</td>
<td>a In the models, students describe* relationships between components, including:</td>
<td>a Students use the models to describe* that although organisms can display life cycles that look different, they all follow the same pattern.</td>
</tr>
<tr>
<td>i. Organisms (both plant and animal).</td>
<td>i. Organisms are born, grow, and die in a pattern known as a life cycle.</td>
<td>b Students use the models to make predictions related to the phenomenon, based on patterns identified among life cycles (e.g., prediction could include that if there are no births, deaths will continue and eventually there will be no more of that type of organism).</td>
</tr>
<tr>
<td>ii. Birth.</td>
<td>ii. Different organisms’ life cycles can look very different.</td>
<td></td>
</tr>
<tr>
<td>iii. Growth.</td>
<td>iii. A causal direction of the cycle (e.g., without birth, there is no growth; without reproduction, there are no births).</td>
<td></td>
</tr>
<tr>
<td>iv. Reproduction.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v. Death.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3-LS3-1 Heredity: Inheritance and Variation of Traits

Students who demonstrate understanding can:

3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]

The performance expectation above was developed using the following elements from the NRC document A Framework for K-12 Science Education:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing and Interpreting Data</td>
<td>LS3.A: Inheritance of Traits</td>
<td></td>
</tr>
<tr>
<td>Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Analyze and interpret data to make sense of phenomena using logical reasoning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS3.B: Variation of Traits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Many characteristics of organisms are inherited from their parents.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Different organisms vary in how they look and function because they have different inherited information.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patterns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Similarities and differences in patterns can be used to sort and classify natural phenomena.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1</th>
<th>Organizing data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students organize the data (e.g., from students’ previous work, grade-appropriate existing datasets) using graphical displays (e.g., table, chart, graph). The organized data include:</td>
</tr>
<tr>
<td>i</td>
<td>Traits of plant and animal parents.</td>
</tr>
<tr>
<td>ii</td>
<td>Traits of plant and animal offspring.</td>
</tr>
<tr>
<td>iii</td>
<td>Variations in similar traits in a grouping of similar organisms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Identifying relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students identify and describe patterns in the data, including:</td>
</tr>
<tr>
<td>i</td>
<td>Similarities in the traits of a parent and the traits of an offspring (e.g., tall plants typically have tall offspring).</td>
</tr>
<tr>
<td>ii</td>
<td>Similarities in traits among siblings (e.g., siblings often resemble each other).</td>
</tr>
<tr>
<td>iii</td>
<td>Differences in traits in a group of similar organisms (e.g., dogs come in many shapes and sizes, a field of corn plants have plants of different heights).</td>
</tr>
<tr>
<td>iv</td>
<td>Differences in traits of parents and offspring (e.g., offspring do not look exactly like their parents).</td>
</tr>
<tr>
<td>v</td>
<td>Differences in traits among siblings (e.g., kittens from the same mother may not look exactly like their mother).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Interpreting data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students describe that the pattern of similarities in traits between parents and offspring, and between siblings, provides evidence that traits are inherited.</td>
</tr>
<tr>
<td>b</td>
<td>Students describe that the pattern of differences in traits between parents and offspring, and between siblings, provides evidence that inherited traits can vary.</td>
</tr>
<tr>
<td>c</td>
<td>Students describe that the variation in inherited traits results in a pattern of variation in traits in groups of organisms that are of a similar type.</td>
</tr>
</tbody>
</table>
### 3-LS3-2 Heredity: Inheritance and Variation of Traits

Students who demonstrate understanding can:

3-LS3-2. **Use evidence to support the explanation that traits can be influenced by the environment.** [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constructing Explanations and Designing Solutions</strong></td>
<td><strong>LS3.A: Inheritance of Traits</strong></td>
<td><strong>Cause and Effect</strong></td>
</tr>
<tr>
<td>Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.</td>
<td>• Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.</td>
<td>• Cause and effect relationships are routinely identified and used to explain change.</td>
</tr>
<tr>
<td>• Use evidence (e.g., observations, patterns) to support an explanation.</td>
<td><strong>LS3.B: Variation of Traits</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The environment also affects the traits that an organism develops.</td>
<td></td>
</tr>
</tbody>
</table>

### Observable features of the student performance by the end of the grade:

1. **Articulating the explanation of phenomena**
   - a. Students identify the given explanation to be supported, including a statement that relates the phenomenon to a scientific idea, including that many inherited traits can be influenced by the environment.

2. **Evidence**
   - a. Students describe* the given evidence that supports the explanation, including:
     - i. Environmental factors that vary for organisms of the same type (e.g., amount or food, amount of water, amount of exercise an animal gets, chemicals in the water) that may influence organisms' traits.
     - ii. Inherited traits that vary between organisms of the same type (e.g., height or weight of a plant or animal, color or quantity of the flowers).
     - iii. Observable inherited traits of organisms in varied environmental conditions

3. **Reasoning**
   - a. Students use reasoning to connect the evidence and support an explanation about environmental influences on inherited traits in organisms. In their chain of reasoning, students describe* a cause-and-effect relationship between a specific causal environmental factor and its effect of a given variation in a trait (e.g., not enough water produces plants that are shorter and have fewer flowers than plants that had more water available).
3-LS4-2 Biological Evolution: Unity and Diversity

Students who demonstrate understanding can:

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

The performance expectation above was developed using the following elements from the NRC document A Framework for K-12 Science Education:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructing Explanations and Designing Solutions</td>
<td>LS4.B: Natural Selection</td>
<td>Cause and Effect</td>
</tr>
<tr>
<td>Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.</td>
<td>Sometimes the differences between individuals of the same species provide advantages in surviving, finding mates, and reproducing.</td>
<td>Cause and effect relationships are routinely identified and used to explain change.</td>
</tr>
<tr>
<td>• Use evidence (e.g., observations, patterns) to construct an explanation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observable features of the student performance by the end of the grade:

1. Articulating the explanation of phenomena
   a. Students articulate a statement that relates the given phenomenon to a scientific idea, including that variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
   b. Students use evidence and reasoning to construct an explanation for the phenomenon.

2. Evidence
   a. Students describe* the given evidence necessary for the explanation, including:
      i. A given characteristic of a species (e.g., thorns on a plant, camouflage of an animal, the coloration of moths).
      ii. The patterns of variation of a given characteristic among individuals in a species (e.g., longer or shorter thorns on individual plants, dark or light coloration of animals).
      iii. Potential benefits of a given variation of the characteristic (e.g., the light coloration of some moths makes them difficult to see on the bark of a tree).

3. Reasoning
   a. Students use reasoning to logically connect the evidence to support the explanation for the phenomenon. Students describe* a chain of reasoning that includes:
      i. That certain variations in characteristics make it harder or easier for an animal to survive, find mates, and reproduce (e.g., longer thorns prevent predators more effectively and increase the likelihood of survival; light coloration of some moths provides camouflage in certain environments, making it more likely that they will live long enough to be able to mate and reproduce).
      ii. That the characteristics that make it easier for some organisms to survive, find mates, and reproduce give those organisms an advantage over other organisms of the same species that don’t have those traits.
      iii. That there can be a cause-and-effect relationship between a specific variation in a characteristic (e.g., longer thorns, coloration of moths) and its effect on the ability of the individual organism to survive and reproduce (e.g., plants with longer thorns are less likely to be eaten, darker moths are less likely to be seen and eaten on dark trees).
3. Weather and Climate

Students who demonstrate understanding can:

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Science and Engineering Practices

- Analyzing and Interpreting Data
  - Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.
  - Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1)

- Engaging in Argument from Evidence
  - Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).
  - Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-ESS3-1)

- Obtaining, Evaluating, and Communicating Information
  - Obtaining, evaluating, and communicating information in 3-5 builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
  - Obtain and combine information from books and other reliable media to explain phenomena. (3-ESS2-2)

Disciplinary Core Ideas

- ESS2.D: Weather and Climate
  - Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)
  - Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)

- ESS3.B: Natural Hazards
  - A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)

Crosscutting Concepts

- Patterns
  - Patterns of change can be used to make predictions. (3-ESS2-1), (3-ESS2-2)
  - Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)

Connections to Nature of Science

- Science is a Human Endeavor
  - Science affects everyday life. (3-ESS3-1)

Common Core State Standards Connections:

**ELA/Literacy -**

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2)

RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2)

W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-ESS2-1)

W.3.7 Conduct short research projects that build knowledge about a topic. (3-ESS3-1)

W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-ESS2-1)

**Mathematics -**

MP.2 Reason abstractly and quantitatively. (3-ESS2-1), (3-ESS2-2), (3-ESS3-1)

MP.4 Model with mathematics. (3-ESS2-1), (3-ESS2-2), (3-ESS3-1)

MP.5 Use appropriate tools strategically. (3-ESS2-1)

3.MD.A.2 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. (3-ESS2-1)

3.MD.B.3 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 bar graphs. (3-ESS2-1)

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### 3-ESS2-1 Earth's Systems

Students who demonstrate understanding can:

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analyzing and Interpreting Data</strong></td>
<td><strong>ESS2.D: Weather and Climate</strong></td>
<td><strong>Patterns</strong></td>
</tr>
<tr>
<td>Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</td>
<td>- Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.</td>
<td>- Patterns of change can be used to make predictions.</td>
</tr>
<tr>
<td>• Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1</th>
<th>Organizing data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students use graphical displays (e.g., table, chart, graph) to organize the given data by season using tables, pictographs, and/or bar charts, including:</td>
</tr>
<tr>
<td>i.</td>
<td>Weather condition data from the same area across multiple seasons (e.g., average temperature, precipitation, wind direction).</td>
</tr>
<tr>
<td>ii.</td>
<td>Weather condition data from different areas (e.g., hometown and nonlocal areas, such as a town in another state).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Identifying relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students identify and describe* patterns of weather conditions across:</td>
</tr>
<tr>
<td>i.</td>
<td>Different seasons (e.g., cold and dry in the winter, hot and wet in the summer; more or less wind in a particular season).</td>
</tr>
<tr>
<td>ii.</td>
<td>Different areas (e.g., certain areas (defined by location, such as a town in the Pacific Northwest), have high precipitation, while a different area (based on location or type, such as a town in the Southwest) have very little precipitation).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Interpreting data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students use patterns of weather conditions in different seasons and different areas to predict:</td>
</tr>
<tr>
<td>i.</td>
<td>The typical weather conditions expected during a particular season (e.g., &quot;In our town in the summer it is typically hot, as indicated on a bar graph over time, while in the winter it is typically cold; therefore, the prediction is that next summer it will be hot and next winter it will be cold.&quot;).</td>
</tr>
<tr>
<td>ii.</td>
<td>The typical weather conditions expected during a particular season in different areas.</td>
</tr>
</tbody>
</table>
Students who demonstrate understanding can:

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

**Science and Engineering Practices**

*Obtaining, Evaluating, and Communicating Information*

Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
- Obtain and combine information from books and other reliable media to explain phenomena.

**Disciplinary Core Ideas**

ESS2.D: Weather and Climate
- Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.

**Crosscutting Concepts**

Patterns
- Patterns of change can be used to make predictions.

**Observable features of the student performance by the end of the grade:**

<table>
<thead>
<tr>
<th></th>
<th>Obtaining information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students use books and other reliable media to gather information about:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. Climates in different regions of the world (e.g., equatorial, polar, coastal, mid-continental).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. Variations in climates within different regions of the world (e.g., variations could include an area's average temperatures and precipitation during various months over several years or an area's average rainfall and temperatures during the rainy season over several years).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Evaluating information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Students combine obtained information to provide evidence about the climate pattern in a region that can be used to make predictions about typical weather conditions in that region.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Communicating information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Students use the information they obtained and combined to describe*:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. Climates in different regions of the world.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. Examples of how patterns in climate could be used to predict typical weather conditions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii. That climate can vary over years in different regions of the world.</td>
<td></td>
</tr>
</tbody>
</table>
3-ESS3-1 Earth and Human Activity

Students who demonstrate understanding can:

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lighting rods.]

The performance expectation above was developed using the following elements from the NRC document A Framework for K–12 Science Education:

Science and Engineering Practices

Engaging in Argument from Evidence
Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

Disciplinary Core Ideas

ESS3.B: Natural Hazards

- A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)

Crosscutting Concepts

Cause and Effect

- Cause and effect relationships are routinely identified, tested, and used to explain change.

Connections to Engineering, Technology, and Applications of Science

Influence of Engineering, Technology, and Science on Society and the Natural World

- Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).

Connections to Nature of Science

Science is a Human Endeavor

- Science affects everyday life.

Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1</th>
<th>Supported claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students make a claim about the merit of a given design solution that reduces the impact of a weather-related hazard.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Identifying scientific evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students describe* the given evidence about the design solution, including evidence about:</td>
</tr>
<tr>
<td></td>
<td>i. The given weather-related hazard (e.g., heavy rain or snow, strong winds, lightning, flooding along river banks).</td>
</tr>
<tr>
<td></td>
<td>ii. Problems caused by the weather related hazard (e.g., heavy rains cause flooding, lightning causes fires).</td>
</tr>
<tr>
<td></td>
<td>iii. How the proposed solution addresses the problem (e.g., dams and levees are designed to control flooding, lightning rods reduce the chance of fires) [note: mechanisms are limited to simple observable relationships that rely on logical reasoning].</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Evaluating and critiquing evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students evaluate the evidence using given criteria and constraints to determine:</td>
</tr>
<tr>
<td></td>
<td>i. How the proposed solution addresses the problem, including the impact of the weather-related hazard after the design solution has been implemented.</td>
</tr>
<tr>
<td></td>
<td>ii. The merits of a given solution in reducing the impact of a weather-related hazard (i.e., whether the design solution meets the given criteria and constraints).</td>
</tr>
<tr>
<td></td>
<td>iii. The benefits and risks a given solution poses when responding to the societal demand to reduce the impact of a hazard.</td>
</tr>
</tbody>
</table>
3-5. Engineering Design

Students who demonstrate understanding can:

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

Science and Engineering Practices

- Asking Questions and Defining Problems
- Planning and Carrying Out Investigations
- Constructing Explanations and Designing Solutions

Disciplinary Core Ideas

- ETS1.A: Defining and Delimiting Engineering Problems
  - Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)
- ETS1.B: Developing Possible Solutions
  - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
  - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)
  - Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3)
- ETS1.C: Optimizing the Design Solution
  - Different solutions need to be tested in order to determine which of them best solve the problem, given the criteria and the constraints. (3-5-ETS1-3)

Crosscutting Concepts

- Influence of Science, Engineering, and Technology on Society and the Natural World
  - People’s needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)
  - Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)

Connections to 3-5-ETS1.A: Defining and Delimiting Engineering Problems include:

- Fourth Grade: 4-ESS3-4
- Fourth Grade: 4-ETS1-1

Connections to 3-5-ETS1.B: Designing Solutions to Engineering Problems include:

- Fourth Grade: 4-ESS3-2

Connections to 3-5-ETS1.C: Optimizing the Design Solution include:

- Fourth Grade: 4-PS3-3

Articulation of DCIs across grade-bands:

- K-ETS1.A (K-ETS1-1),(K-ETS1-2),(K-ETS1-3); K-ETS1.B (K-ETS1-2); K-ETS1.C (K-ETS1-2),(K-ETS1-3)
- 1-ETS1.A (1-ETS1-1),(1-ETS1-2); 1-ETS1.B (1-ETS1-2),(1-ETS1-3); 1-ETS1.C (1-ETS1-2),(1-ETS1-3)
- 2-ETS1.A (2-ETS1-1),(2-ETS1-2),(2-ETS1-3); 2-ETS1.B (2-ETS1-2),(2-ETS1-3); 2-ETS1.C (2-ETS1-2),(2-ETS1-3)
- MS.ETS1.A (MS-ETS1-1); MS.ETS1.B (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3); MS.ETS1.C (3-5-ETS1-2),(3-5-ETS1-3)

Common Core State Standards Connections:

ELA/Literacy -

- RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)
- RI.5.7 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. (3-5-ETS1-2)
- RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)
- W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-3)
- W.5.8 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. (3-5-ETS1-3)
- W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1),(3-5-ETS1-3)

Mathematics -

- MP.2 Reason abstractly and quantitatively. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3)
- MP.4 Model with mathematics. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3)
- MP.5 Use appropriate tools strategically. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3)
- 3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1),(3-5-ETS1-2)

### 3-5-ETS1-1  Engineering Design

Students who demonstrate understanding can:

1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asking Questions and Defining Problems</strong></td>
<td><strong>ETS1.A: Defining and Delimiting Engineering Problems</strong></td>
<td><strong>Influence of Science, Engineering, and Technology on Society and the Natural World</strong></td>
</tr>
<tr>
<td>Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.</td>
<td>• Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.</td>
<td>• People’s needs and wants change over time, as do their demands for new and improved technologies.</td>
</tr>
<tr>
<td>• Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Observables features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th>1</th>
<th>Identifying the problem to be solved</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students use given scientific information and information about a situation or phenomenon to define a simple design problem that includes responding to a need or want.</td>
</tr>
<tr>
<td>b</td>
<td>The problem students define is one that can be solved with the development of a new or improved object, tool, process, or system.</td>
</tr>
<tr>
<td>c</td>
<td>Students describe* that people’s needs and wants change over time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Defining the boundaries of the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Students define the limits within which the problem will be addressed, which includes addressing something people want and need at the current time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Defining the criteria and constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Based on the situation people want to change, students specify criteria (required features) of a successful solution.</td>
</tr>
<tr>
<td>b</td>
<td>Students describe* the constraints or limitations on their design, which may include:</td>
</tr>
<tr>
<td>i.</td>
<td>Cost.</td>
</tr>
<tr>
<td>ii.</td>
<td>Materials.</td>
</tr>
<tr>
<td>iii.</td>
<td>Time.</td>
</tr>
</tbody>
</table>
3-5-ETS1-2  Engineering Design

Students who demonstrate understanding can:

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

The performance expectation above was developed using the following elements from the NRC document *A Framework for K–12 Science Education*:

**Science and Engineering Practices**

**Constructing Explanations and Designing Solutions**

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

- Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.

**Disciplinary Core Ideas**

**ETS1.B: Developing Possible Solutions**

- Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions.
- At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.

**Crosscutting Concepts**

**Influence of Science, Engineering, and Technology on Society and the Natural World**

- Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

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**Observable features of the student performance by the end of the grade:**

1. **Using scientific knowledge to generate design solutions**
   - Students use grade-appropriate information from research about a given problem, including the causes and effects of the problem and relevant scientific information.
   - Students generate at least two possible solutions to the problem based on scientific information and understanding of the problem.
   - Students specify how each design solution solves the problem.
   - Students share ideas and findings with others about design solutions to generate a variety of possible solutions.
   - Students describe the necessary steps for designing a solution to a problem, including conducting research and communicating with others throughout the design process to improve the design [note: emphasis is on what is necessary for designing solutions, not on a step-wise process].

2. **Describing criteria and constraints, including quantification when appropriate**
   - Students describe:
     - The given criteria (required features) and constraints (limits) for the solutions, including increasing benefits, decreasing risks/costs, and meeting societal demands as appropriate.
     - How the criteria and constraints will be used to generate and test the design solutions.

3. **Evaluating potential solutions**
   - Students test each solution under a range of likely conditions and gather data to determine how well the solutions meet the criteria and constraints of the problem.
   - Students use the collected data to compare solutions based on how well each solution meets the criteria and constraints of the problem.
### 3-5-ETS1-3 Engineering Design

Students who demonstrate understanding can:

3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning and Carrying Out Investigations</strong></td>
<td><strong>ETS1.B: Developing Possible Solutions</strong></td>
<td></td>
</tr>
<tr>
<td>Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.</td>
<td>Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.</td>
<td></td>
</tr>
<tr>
<td>• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.</td>
<td><strong>ETS1.C: Optimizing the Design Solution</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.</td>
<td></td>
</tr>
</tbody>
</table>

### Observable features of the student performance by the end of the grade:

<table>
<thead>
<tr>
<th></th>
<th>Identifying the purpose of the investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students describe* the purpose of the investigation, which includes finding possible failure points or difficulties to identify aspects of a model or prototype that can be improved.</td>
</tr>
<tr>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Identifying the evidence to be address the purpose of the investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Students describe* the evidence to be collected, including:</td>
</tr>
<tr>
<td>a</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>How well the model/prototype performs against the given criteria and constraints.</td>
</tr>
<tr>
<td>ii.</td>
<td>Specific aspects of the prototype or model that do not meet one or more of the criteria or constraints (i.e., failure points or difficulties).</td>
</tr>
<tr>
<td>iii.</td>
<td>Aspects of the model/prototype that can be improved to better meet the criteria and constraints.</td>
</tr>
<tr>
<td>b</td>
<td>Students describe* how the evidence is relevant to the purpose of the investigation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Planning the investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Students create a plan for the investigation that describes* different tests for each aspect of the criteria and constraints. For each aspect, students describe*:</td>
</tr>
<tr>
<td>a</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>The specific criterion or constraint to be used.</td>
</tr>
<tr>
<td>ii.</td>
<td>What is to be changed in each trial (the independent variable).</td>
</tr>
<tr>
<td>iii.</td>
<td>The outcome (dependent variable) that will be measured to determine success.</td>
</tr>
<tr>
<td>iv.</td>
<td>What tools and methods are to be used for collecting data.</td>
</tr>
<tr>
<td>v.</td>
<td>What is to be kept the same from trial to trial to ensure a fair test.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Collecting the data</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Students carry out the investigation, collecting and recording data according to the developed plan.</td>
</tr>
</tbody>
</table>
Health Curriculum
## PERSONAL and COMMUNITY HEALTH

<table>
<thead>
<tr>
<th>NHES Performance Indicators</th>
<th>Essential Concepts/Focus Skills</th>
<th>Suggested Lesson Plans/Resources/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 1 - Essential Concepts</strong>&lt;br&gt;1.5.1- Describe the relationship between healthy behaviors and personal health.&lt;br&gt;1.5.2- Identify examples of physical health.&lt;br&gt;1.5.3- Describe ways in which safe and healthy school and community environments can promote personal health.&lt;br&gt;1.5.4- Describe ways to prevent common childhood injuries and health problems.&lt;br&gt;1.5.5- Describe when it is important to seek health care.</td>
<td>• Identify positive health practices that reduce illness, disease, and injury (e.g. handwashing). (1.5.1, 1.5.2, 1.5.4, 5.5.4, 7.5.1)&lt;br&gt;• Describe how bacteria and viruses are spread and how they affect the body. (1.5.4, 1.5.5, 5.5.4)&lt;br&gt;• Discuss the impact of select health concerns on the community and community services to support health (e.g. influenza and flu shots). (1.5.3, 1.5.5, 2.5.4, 5.5.4, 6.5.2)</td>
<td>➢ <strong>Preventing Spread of Germs:</strong>&lt;br&gt;• Reinforce Hand washing - Focus related to disease prevention and how germs are spread.&lt;br&gt;• Sneeze into your sleeve optional videos <a href="http://pisdtv.pisd.edu/instructional-technology/features/O_iad_w93ed1UxUywJT">http://pisdtv.pisd.edu/instructional-technology/features/O_iad_w93ed1UxUywJT</a> (5 min.)&lt;br&gt;<a href="https://www.youtube.com/watch?v=SpPA73SzyE">https://www.youtube.com/watch?v=SpPA73SzyE</a> (2 min.)&lt;br&gt;• Collaborate with School nurse/GLO Germ- Focus on shared objects in the classroom, transfer of germs to objects through coughing/sneezing/touching and how the “Flu” and other diseases are spread this way.&lt;br&gt;<a href="http://www.glogerm.com/sheets/grade3.pdf">http://www.glogerm.com/sheets/grade3.pdf</a></td>
</tr>
<tr>
<td><strong>Standard 2 - Analyzing Influences</strong>&lt;br&gt;2.5.4- Describe how the school and community can support personal health practices and behaviors.</td>
<td></td>
<td>➢ Differentiate using “Is it a cold or the flu” poster <a href="http://images.mooremedical.com/webmail3/Cold_or_Flu_Poster.pdf">http://images.mooremedical.com/webmail3/Cold_or_Flu_Poster.pdf</a></td>
</tr>
<tr>
<td><strong>Standard 5 - Decision Making</strong>&lt;br&gt;5.5.4- Predict the potential outcomes of each option when making a health-related decision.</td>
<td></td>
<td>➢ Community Services&lt;br&gt;• Discuss importance of Flu Vaccines –Fight the Flu <a href="https://www.youtube.com/watch?v=XzEioj6iB6s">https://www.youtube.com/watch?v=XzEioj6iB6s</a>&lt;br&gt;• Identify Community Resources- Discuss where you can get flu vaccines. Align with Social Studies Alive- Civic Services.</td>
</tr>
<tr>
<td><strong>Standard 7 - Practicing Health-Enhancing Behaviors</strong>&lt;br&gt;7.5.1- Identify responsible personal health behaviors.</td>
<td></td>
<td>➢ Optional Hygiene at teacher discretion (Note: Comprehensive hygiene in 4th) <a href="http://departments.olatheschools.com/healthservices/files/2012/05/3rd-grade-health-powerpoint.pptx">http://departments.olatheschools.com/healthservices/files/2012/05/3rd-grade-health-powerpoint.pptx</a></td>
</tr>
</tbody>
</table>

**Vocabulary students know and use:**<br>Illness, disease, germs, bacteria, viruses, handwashing, influenza, vaccine, community services
## Elementary Health Curriculum - Grade 3

### NUTRITION

<table>
<thead>
<tr>
<th>NHES Performance Indicators</th>
<th>Essential Concepts/Focus Skills</th>
<th>Suggested Lesson Plans/Resources/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 1 - Essential Concepts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5.1- Describe the relationship between healthy behaviors and personal health.</td>
<td>• Identify the five main food groups and name a variety of nutritious examples of foods in each (review from K-2). (5.5.1, 7.5.1)</td>
<td></td>
</tr>
<tr>
<td>1.5.3- Describe ways in which safe and healthy school and community environments can promote personal health.</td>
<td>• Explain how MyPlate serves as a reminder for how to eat a healthier meal. (3.5.2, 6.5.2, 7.5.2)</td>
<td></td>
</tr>
<tr>
<td>1.5.4- Describe ways to prevent common childhood injuries and health problems.</td>
<td>• Identify what foods to eat more of, and explain that nutrients in food help us grow and stay healthy (3.5.1, 5.5.1, 5.5.4, 7.5.1)</td>
<td></td>
</tr>
</tbody>
</table>

**Standard 2 - Analyzing Influences**

2.5.4- Describe how the school and community can support personal health practices and behaviors.

**Standard 3 - Accessing Valid Information**

3.5.1- Identify characteristics of valid health information, products, and services.
3.5.2- Locate resources from home, school, and community that provide valid health information.

**Standard 5 - Decision Making**

5.5.1- Identify health-related situations that might require a thoughtful decision.
5.5.4- Predict the potential outcomes of each option when making a health-related decision.

**Standard 6 - Goal Setting**

6.5.2- Identify resources to assist in achieving a personal health goal.

**Standard 7 - Practicing Health-Enhancing Behaviors**

7.5.1- Identify responsible personal health behaviors.
7.5.2- Identify responsible personal health behaviors.

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**Vocabulary students know and use:** Food Groups, nutrients, fruit, vegetable, grains, protein, dairy, sometimes foods, solid fats, sugar, consumption, content, influence, positive health practice, goal, decision, improvement, society, community, influences.

- **Serving My Plate, U.S. Department of Agriculture: Resources and Reproducibles:**
  - Note: Grade 3 uses Lessons titled First and Second Course.
  - Assessment Quiz and Review [https://www.choosemyplate.gov/quiz](https://www.choosemyplate.gov/quiz)

- **Optional - Collaborate with Children’s Mercy StarPower Healthy Eating:** [http://bit.ly/2g7xLwf](http://bit.ly/2g7xLwf)

- **Aligns with Journeys Lesson 12- Tops and Bottoms Pg 431**

- **Students set a short term Nutrition Goal (i.e. eat a fruit or vegetable with each meal/snack for one week)**

- **Super Tracker with MyPlate** [https://supertracker.usda.gov/](https://supertracker.usda.gov/)
  - [https://supertracker.usda.gov/mytop5goals.aspx](https://supertracker.usda.gov/mytop5goals.aspx)
  - Log in and use My Journal to log goals for one week

- **Create an Imovie on the benefits of making healthy choices in nutrition.**
The Elementary Health Curriculum is supported by the Counseling and Physical Education Curriculum

### INJURY PREVENTION and SAFETY

<table>
<thead>
<tr>
<th>NHES Performance Indicators</th>
<th>Essential Concepts/Focus Skills</th>
<th>Suggested Lesson Plans/Resources/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 1 - Essential Concepts</strong>&lt;br&gt;1.5.4- Describe ways to prevent common childhood injuries and health problems.</td>
<td>• Apply school wide safety expectations for recess, cafeteria, classroom, and hallway (1.5.4, 7.5.1, 7.5.3)</td>
<td>➢ <strong>Teaching Routines and Procedures</strong>&lt;br&gt;• Creating Classroom Agreements&lt;br&gt;• PBIS Lessons</td>
</tr>
<tr>
<td><strong>Standard 5 - Decision Making</strong>&lt;br&gt;5.5.2- Analyze when assistance is needed in making a health-related decision.&lt;br&gt;5.5.4- Predict the potential outcomes of each option when making a health-related decision.</td>
<td>• Identify potential dangers and practice appropriate responses to: (fire safety, water safety, bike safety, weather related emergencies, etc.) (1.5.4, 5.5.2, 5.5.4, 7.5.1, 8.5.1)</td>
<td>➢ <strong>Collaborate with Local Fire Department for fire safety visit</strong></td>
</tr>
<tr>
<td><strong>Standard 7 - Practicing Health-Enhancing Behaviors</strong>&lt;br&gt;7.5.1 - Identify responsible personal health behaviors.&lt;br&gt;7.5.2 - Demonstrate a variety of healthy practices and behaviors to maintain or improve personal health.&lt;br&gt;7.5.3- Demonstrate a variety of behaviors to avoid or reduce health risks.</td>
<td>• Understand and practice appropriate emergency procedures (fire &amp; tornado drill/ALICE) (1.5.4, 7.5.1, 7.5.3)</td>
<td>➢ <strong>Collaborate with local Fire Department (i.e. bike helmets) and PE Teacher (sports safety equipment)</strong></td>
</tr>
<tr>
<td><strong>Standard 8 - Health Promotion</strong>&lt;br&gt;8.5.1- Express opinions and give accurate information about health issues.</td>
<td>• Apply basic first aid techniques. (5.5.2, 7.5.1, 7.5.2, 7.5.3)</td>
<td>➢ <strong>Discuss common situations requiring first aid and appropriate first aid response for</strong>&lt;br&gt;✔ Nosebleed&lt;br&gt;✔ Abrasion and cut&lt;br&gt;✔ Bruise</td>
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</tbody>
</table>
| Vocabulary students know and use: Danger, fire, drill, exits, home plan, meeting place, water rescue, emergency, bike safety, helmet, reflector, signals, prevention, first aid, burn, cuts, falls, head injury, nosebleed, equipment. | • Explain importance of wearing safety equipment during sports or outdoor activities (helmets, reflectors, signals etc.) (1.5.4, 5.5.4, 7.5.1) |}
## Elementary Health Curriculum - Grade 3

### SUBSTANCE SAFETY

<table>
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| **Standard 5- Decision Making**  
1.5.5 – Describe when it is important to seek health care. | • Reinforce and practice the district elementary medication policy. (1.5.5, 7.5.1, 2.5.4)  
✓ All medications taken to the school nurse.  
✓ Some students can carry medication for asthma (inhaler) and severe allergies (epinephrine autoinjector) with approval of doctor, parent, and school nurse. | ➢ Align with the beginning school year classroom rules and reinforce as needed. |
| 2.5.4 – Describe how the school and community can support personal health practices and behaviors. |  | |
| 5.5.4- Predict the potential outcomes of each option when making a health-related decision. |  | |
| 7.5.1 - Identify responsible personal health behaviors. |  | |

**Vocabulary students know and use:** OTC Medication, Prescription Medication, Health Room
### National Health Education Standards (NHES)

**Standard 1** Students will comprehend concepts related to health promotion and disease prevention to enhance health.

**Rationale:** The acquisition of basic health concepts and functional health knowledge provides a foundation for promoting health-enhancing behaviors among youth. This standard includes essential concepts that are based on established health behavior theories and models. Concepts that focus on both health promotion and risk reduction are included in the performance indicators.

### Performance Indicators Grades 3 - 5

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.5.1 Describe the relationship between healthy behaviors and personal health.</td>
</tr>
<tr>
<td>1.5.2 Identify examples of emotional, intellectual, physical, and social health.</td>
</tr>
<tr>
<td>1.5.3 Describe ways in which safe and healthy school and community environments can promote personal health.</td>
</tr>
<tr>
<td>1.5.4 Describe ways to prevent common childhood injuries and health problems.</td>
</tr>
<tr>
<td>1.5.5 Describe when it is important to seek health care.</td>
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</tbody>
</table>

**Standard 2 Students** will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

**Rationale:** Health is affected by a variety of positive and negative influences within society. This standard focuses on identifying and understanding the diverse internal and external factors that influence health practices and behaviors among youth, including personal values, beliefs, and perceived norms.

| 2.5.1 Describe how family influences personal health practices and behaviors. |
| 2.5.2 Identify the influence of culture on health practices and behaviors. |
| 2.5.3 Identify how peers can influence healthy and unhealthy behaviors |
| 2.5.4 Describe how the school and community can support personal health practices and behaviors. |
| 2.5.5 Explain how media influences thoughts, feelings, and health behaviors. |
| 2.5.6 Describe ways that technology can influence personal health. |
### National Health Education Standards (NHES)

#### Standard 3: Students will demonstrate the ability to access valid information, products, and services to enhance health.
**Rationale:** Access to valid health information and health-promoting products and services is critical in the prevention, early detection, and treatment of health problems. This standard focuses on how to identify and access valid health resources and to reject unproven sources. Application of the skills of analysis, comparison, and evaluation of health resources empowers students to achieve health literacy.

- **3.5.1** Identify characteristics of valid health information, products, and services.
- **3.5.2** Locate resources from home, school, and community that provide valid health information.

#### Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
**Rationale:** Effective communication enhances personal, family, and community health. This standard focuses on how responsible individuals use verbal and non-verbal skills to develop and maintain healthy personal relationships. The ability to organize and to convey information and feelings is the basis for strengthening interpersonal interactions and reducing or avoiding conflict.

- **4.5.1** Demonstrate effective verbal and nonverbal communication skills to enhance health.
- **4.5.2** Demonstrate refusal skills that avoid or reduce health risks.
- **4.5.3** Demonstrate nonviolent strategies to manage or resolve conflict.
- **4.5.4** Demonstrate how to ask for assistance to enhance personal health.

#### Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.
**Rationale:** Decision-making skills are needed to identify, implement, and sustain health-enhancing behaviors. This standard includes the essential steps that are needed to make healthy decisions as prescribed in the performance indicators. When applied to health issues, the decision-making process enables individuals to collaborate with others to improve their quality of life.

- **5.5.1** Identify health-related situations that might require a thoughtful decision.
- **5.5.2** Analyze when assistance is needed in making a health-related decision.
- **5.5.3** List healthy options to health-related issues or problems.
- **5.5.4** Predict the potential outcomes of each option when making a health-related decision.
- **5.5.5** Choose a healthy option when making a decision.
- **5.5.6** Describe the outcomes of a health-related decision.
### National Health Education Standards (NHES)

**Standard 6** Students will demonstrate the ability to use goal-setting skills to enhance health.

**Rationale:** Goal-setting skills are essential to help students identify, adopt, and maintain healthy behaviors. This standard includes the critical steps that are needed to achieve both short-term and long-term health goals. These skills make it possible for individuals to have aspirations and plans for the future.

**Standard 7** Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

**Rationale:** Research confirms that practicing health-enhancing behaviors can contribute to a positive quality of life. In addition, many diseases and injuries can be prevented by reducing harmful and risk-taking behaviors. This standard promotes the acceptance of personal responsibility for health and encourages the practice of healthy behaviors.

**Standard 8** Students will demonstrate the ability to advocate for personal, family, and community health.

**Rationale:** Advocacy skills help students promote healthy norms and healthy behaviors. This standard helps students develop important skills to target their health-enhancing messages and to encourage others to adopt healthy behaviors.