

Green Mountain Paper Company

Correlated to the Common Core Standards Grade 7 for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects and Grades 5, 6, and 7 for Mathematics

| Standards Language Arts/ Literacy Reading | Simulation Episode | Student Workbook | Teacher Handbook 1 | Teacher Handbook 2 Literacy Links (LL) Science Project (SCP) Social Studies Project (SSP) |
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| Reading Standards for Informational Text Key Ideas and Details 1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. | 2, 3, 6, 8, 9, 11, 12 | 21–22, 34–35, 69, 97, 116–118, 128–129 | 236–238, 323, 359–361 | LL 9, 10, 21, 22 SCP 6, 8, 9, 14 SSP 4, 6, 7 |
| 2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text. | 2, 8, 9, 12 | 21–22, 87, 128–129 | 323, 359–361, 366 | LL 3, 9, 10, 23 SCP 5, 6, 9, 16 SSP 3, 8, 10, 14, 16 |
| 3. | | | | |
| Craft and Structure 4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone. | 10, 11 | | 402, 456 | SCP 16 |
| 5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas. | | | | LL 8, 14, 15, 16, 17 |
| 6. Determine an author’s point of view or purpose in a | 7, 8 | 89 | 280 | LL 19, 20 |

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| text and analyze how the author distinguishes his or her position from that of others. | | | | SCP 16 SSP 8 |
| Integration of Knowledge and Ideas 7. Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium’s portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words). | 5, 9 | | 187–188, 368–369 | |
| 8. Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. | 5 | 50, 51, 54 | 185 | LL 18, 19 |
| 9. | | | | |
| Range of Reading and Level of Text Complexity 10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range. | 1, 2, 3, 4, 5, 6, 8, 9, 10, 11 | 34–35, 50, 69, 87, 116–118 | 8–9, 11, 60–61, 110–111, 149–150, 186–187, 236–238, 323, 359–361, 404–405, 448–449 | LL 1–25 SCP 3–30, 16 SSP 3–10, 16 |
| Writing Standards Text Types and Purposes 1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. | 2, 3, 5, 6, 8, 12 | 52, 70 | 96, 139, 219, 261, 324, 493–494, 525 | |

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| b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. | 2, 3, 5, 6, 8, 12 | 52–53, 70 | 97, 140, 220, 262, 324, 493– 494, 526 | |
| c. Use words, phrases, and clauses to create cohesion and clarify the relationships among aim(s), reasons, and evidence. | 2, 3, 5, 6, 12 | | 97, 140, 220, 262, 526 | |
| d. Establish and maintain a formal style. | 2, 3, 5, 6, 12 | | 97, 140, 220, 262, 526 | |
| e. Provide a concluding statement or section that follows from and supports the argument presented. | 2, 3, 5, 6, 12 | | 97, 140, 220, 262, 526 | |
| 2. Write informative/ explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. | 1, 4, 6, 7, 8, 9, 11 | 68, 73–75, 89– 90, 99–102 | 48, 179, 305, 316–317, 323, 347, 368, 391, 481 | SCP 14, 15, 17, 18, 19 SSP 14, 15, 17, 18, 19 |
| b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. | 1, 4, 6, 7, 8, 9, 11 | 68, 75, 89–92, 99–102 | 48, 180, 306, 316–317, 348, 368, 392, 482 | SCP 14, 15, 17, 18, 19 SSP 14, 15, 17, |

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| | | | | 18, 19 |
| c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. | 1, 4, 7, 8, 9, 11 | | 48, 180, 306, 348, 392, 482 | |
| d. Use precise language and domain-specific vocabulary to inform about or explain the topic. | 1, 4, 7, 8, 9, 11 | 91 | 48, 180, 306, 316–317, 348, 368–369, 392, 482 | |
| e. Establish and maintain a formal style. | 1, 4, 7, 8, 9, 11 | | 48, 180, 306, 348, 392, 482 | |
| f. Provide a concluding statement or section that follows from and supports the information or explanation presented. | 1, 4, 6, 7, 8, 9, 11 | 68 | 48, 180, 306, 316, 348, 392, 482 | SCP 17 |
| 3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. | 10 | | 437 | |
| a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. | | | | |
| b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. | 10 | | 438 | |
| c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts | 10 | | 438 | |

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| from one time frame or setting to another. | | | | |
| d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. | 9, 10 | 99–100 | 438 | |
| e. Provide a conclusion that follows from and reflects on the narrated experiences or events. | 10 | | 438 | |
| Production and Distribution of Writing 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.) | 1–10 | | 48, 95, 139, 179, 219, 261, 305, 347, 391, 437, 481, 525 | |
| 5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7 on page 52.) | 1–12 | 38–41, 111– 113 | 49, 96, 140, 146, 180, 220, 262, 306, 348, 392, 411, 438, 482, 526 | SCP 18 SSP 19 |
| 6. Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources. | 12 | | 500–501 | SCP 3, 6, 7, 9, 11, 19 SSP 6, 8, 11, 19 |
| Research to Build and Present Knowledge | 1, 2, 3, 4, 5, 8, | | 15, 70–71, 117, | SCP 1–21 |

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| 7. Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation. | 9, 10 | | 155, 194, 195, 324, 325, 368, 412 | SSP 1–21 |
| 8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. | 2, 3, 5, 7, 8, 12 | | 70, 117, 194, 195, 280, 368, 499 | SCP 2, 3, 6, 7, 9, 11, 12–13, 19 SSP 2, 5, 6, 8, 10, 11, 12–13, 18, 19 |
| 9. a. | | | | |
| b. | | | | |
| Range of Writing 10. 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. | 1–12 | 7, 12, 13, 23– 25, 36, 47, 52, 53, 59, 68, 70, 75, 81, 91, 99– 102, 114, 119, 130 | 48–49, 95–96, 139–140, 155, 179–180, 219– 220, 239, 261– 262, 272–273, 280, 305–306, 316–317, 324, 325, 347–348, 368–369, 391– 392, 413, 437– 438, 481–482, 493–494, 525– 526 | LL 23 SCP 7, 14, 15, 17, 18, 19 SSP 14, 15, 17, 18, 19 |
| Speaking and Listening Standards | 1–12 | | 10–13, 63–68, | LL 10, 23, 25 |

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| <p>Comprehension and Collaboration</p> <p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 7 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.</p> | | | 112–114, 150–152, 188–191, 231–233, 274–277, 318–320, 362–365, 406–409, 412, 452–454, 495–497 | |
| <p>b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.</p> | 1–12 | | 10–13, 14, 15, 63–68, 112–114, 150–152, 188–191, 231–233, 274–277, 318–320, 362–365, 406–409, 452–454, 495–497 | LL 10, 15, 16, 23, 24 |
| <p>c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.</p> | 1–12 | | 10–13, 63–68, 112–114, 150–152, 188–191, 231–233, 274–277, 281, 318–320, 362–365, 406–409, 412, | LL 3, 24, 25 |

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| | | | 452–454, 457, 495–497 | |
| d. Acknowledge new information expressed by others and, when warranted, modify their own views. | 1–12 | | 10–13, 63–68, 112–114, 150– 152, 188–191, 231–233, 274– 277, 318–320, 362–365, 406– 409, 452–454, 495–497 | LL 15, 23 |
| 2. | | | | |
| 3. | | | | |
| Presentation of Knowledge and Ideas 4. Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation. | 3, 4, 5, 7, 8, 9, 11, 12 | | 117, 155, 194, 280, 325, 367, 457, 500 | SCP 20 SSP 20 |
| 5. Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. | 3, 10 | | 117, 412 | SCP 19 SSP 19 |
| 6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 on page 52 for specific expectations.) | | | | SSP 20 |

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| Language Standards Conventions of Standard English 1. a. Explain the function of phrases and clauses in general and their function in specific sentences. | 10 | | 111 | |
| b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. | 1–12 | 113 | 49, 96, 140, 180, 220, 262, 306, 348, 392, 482, 526 | |
| c. | | | | |
| 2. a. | | | | |
| b. Spell correctly. | 1–12 | 40–41 | 49, 96, 140, 180, 220, 262, 306, 348, 392, 482, 526 | |
| Knowledge of Language 3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.* | 1–12 | | 49, 96, 140, 180, 220, 262, 306, 348, 392, 482, 526 | |
| Vocabulary Acquisition and Use 4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 7 reading and content</i> , choosing flexibly from a range of strategies. | 1, 5, 9 | | 4, 183, 356 | |

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| a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. | | | | |
| b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>belligerent</i> , <i>bellicose</i> , <i>rebel</i>). | 8 | | 314 | |
| c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. | 1–12 | | 4, 58, 107, 144, 183, 228, 270, 314, 356, 402, 446, 490 | |
| d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). | 2, 8, 10, 12 | | 58, 228, 401, 490 | SCP 3 |
| 5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context. | 10, 11 | | 402, 456 | SCP 16 |
| b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. | | | | SSP 9 |
| c. | | | | |
| 6. Acquire and use accurately grade-appropriate | 1–12 | | 4, 58, 107, 144, | SCP 3, 4, 7, 10, |

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| general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. | | | 183, 228, 270, 314, 356, 490 | 12 SSP 5, 7, 9, 10, 12 |
| Reading Standards for Literacy in History/Social Studies Key Ideas and Details 1. Cite specific textual evidence to support analysis of primary and secondary sources. | 2, 6 | 21–22 | 236–238 | LL 9, 10, 22 SSP 4, 6, 7 |
| 2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions. | 2 | 21–22 | | LL 9, 10, 23 SSP 3, 8, 10, 14, 16 |
| 3. Identify key steps in a text’s description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered). | | | | SSP 3 |
| Craft and Structure 4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies. | 2, 3, 4, 7, 8, 12 | | 58, 107, 116, 144, 270, 314, 490 | SSP 5, 7, 9, 10, 12 |
| 5. Describe how a text presents information (e.g., sequentially, comparatively, causally). | | | | LL 17 |
| 6. Identify aspects of a text that reveal an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts). | 7, 8 | 89 | 280 | LL 19, 20 SSP 8 |

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| Integration of Knowledge and Ideas 7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts. | 2, 4, 5, 7 | | 64–66, 150–151, 188–189, 274–275 | LL 2 SSP 3, 6, 7 |
| 8. Distinguish among fact, opinion, and reasoned judgment in a text. | | | | LL 19 |
| 9. | | | | |
| Range of Reading and Level of Text Complexity 10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently. | | | | LL 10, 12, 13 SSP 3–10, 16 |
| Reading Standards for Literacy in Science and Technical Subjects Key Ideas and Details 1. Cite specific textual evidence to support analysis of science and technical texts. | 9 | 97 | 359–361 | SCP 6, 8, 9, 14 |
| 2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. | 8, 9 | 87 | 359–361, 366 | SCP 5, 6, 9, 16 |
| 3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. | 10 | | 406–407, 411 | |
| Craft and Structure 4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context | 1, 2, 3, 4, 7, 8, 9, 10 | | 4, 58, 107, 144, 270, 314, 356, 402 | SCP 3, 4, 7, 10, 12 |

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| relevant to <i>grades 6–8 texts and topics</i> . | | | | |
| 5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic. | | | | LL 16 |
| 6. Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text. | 8 | 89 | | SCP 16 |
| Integration of Knowledge and Ideas 7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). | 2, 7, 9 | | 64–66, 274–275, 362–363, 368–369 | LL 2 |
| 8. | | | | |
| 9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. | 8 | | 318–319 | |
| Range of Reading and Level of Text Complexity 10. By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently. | 3, 10 | | 110–111, 406–407 | LL 16 SCP 3–10, 16 |
| Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Text Types and Purposes 1. Write arguments focused on <i>discipline-specific content</i> . | 2, 3, 8 | | 95, 139, 324 | |

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| a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. | | | | |
| b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. | 2, 3 | | 96, 140, 324 | |
| c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. | 2, 3 | | 96, 140 | |
| d. Establish and maintain a formal style. | 2, 3 | | 96, 140 | |
| e. Provide a concluding statement or section that follows from and supports the argument presented. | 2, 3 | | 96, 140 | |
| 2. Write informative/ explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. | 1, 8, 9 | | 48, 316–317, 347, 368–369 | SCP 14, 15, 17, 18, 19 SSP 9, 14, 15, 17, 18, 19 |

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| b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. | 1, 8, 9 | | 49, 316–317, 348, 368 | SCP 14, 15, 17, 18, 19 SSP 9, 14, 15, 17, 18, 19 |
| c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. | 1, 8 | | 48, 348 | |
| d. Use precise language and domain-specific vocabulary to inform about or explain the topic. | 1, 8, 9 | | 49, 316–317, 348, 368 | |
| e. Establish and maintain a formal style and objective tone. | 1, 8 | | 49, 348 | |
| f. Provide a concluding statement or section that follows from and supports the information or explanation presented. | 1, 8 | | 49, 316, 348 | SCP 17 |
| Production and Distribution of Writing 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. | 1, 2, 3, 8 | | 48, 95, 139, 347 | |
| 5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and | 1, 2, 3, 8 | | 49, 96, 140, 348 | SCP 18 SSP 19 |

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| audience have been addressed. | | | | |
| 6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently. | 12 | | 501 | SCP 3, 6, 7, 9, 11, 19 SSP 6, 8, 11, 19 |
| Research to Build and Present Knowledge 7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. | 1, 2, 3, 4, 5, 8, 9, 10 | | 15, 70–71, 117, 155, 194, 195, 324, 325, 368, 412 | SCP 1–21 SSP 1–21 |
| 8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. | 2, 3, 5, 7, 9, 12 | | 70, 117, 194, 195, 280, 368, 499 | SCP 3, 6, 7, 9, 11, 12–13, 19 SSP 2, 5, 6, 8, 10, 11, 12–13, 18, 19 |
| 9. Draw evidence from informational texts to support analysis reflection, and research. | | | | SCP 6, 8, 9, 14 SSP 4, 6, 7 |
| Range of Writing 10. Write routinely over extended time frames (time for 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. | 1, 2, 3, 4, 8, 9 | | 13, 48–49, 95–96, 139–140, 155, 324, 325, 368–369 | SCP 7 |

| Standards Math | Simulation Episode | Student Workbook | Teacher Handbook 1 | Teacher Handbook 2 Math Links (ML) Science Project (SCP) |
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| Grade 5 Operations and Algebraic Thinking 5.OA Write and interpret numerical expressions. 1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. | 6 | | 229 | 22, 23 |
| 2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. | 3, 6 | 28, 63 | 229 | 11 |
| Analyze patterns and relationships. 3. | | | | |
| Grade 5 Number and Operations in Base Ten 5.NBT Understand the place value system. 1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. | 4 | 45 | | 7 |
| 2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. | 4, 12 | 44–45 | 500 | 9 |
| 3. Read, write, and compare decimals to thousandths. <ol style="list-style-type: none"> a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. | | | | 7 |

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| b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. | | | | 9 |
| 4. Use place value understanding to round decimals to any place. | 6, 12 | 67 | 500 | 7 |
| Perform operations with multi-digit whole numbers and with decimals to hundredths. 5. Fluently multiply multi-digit whole numbers using the standard algorithm. | 2, 8 | 84, 85 | 70 | 3, 5 |
| 6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. | 2, 3, 6, 7, 10, 12 | 29, 67, 78–80, 106 | 64, 70, 108, 500 | 4, 18 |
| 7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | 2, 3, 4, 5, 7, 12 | 16–18, 30, 46, 58, 78–80 | 65, 66, 154, 193, 500 | 7, 8, 10 |
| Grade 5 Number and Operations—Fractions 5.NF Use equivalent fractions as a strategy to add and subtract fractions. 1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given | | | | 6 |

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| fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. | | | | |
| 2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. | | | | 6 |
| Apply and extend previous understandings of multiplication and division to multiply and divide fractions. 3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | 3, 4, 6 | 29, 30, 67 | 154 | 21 |
| 4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. | 3 | 28 | | 10 |
| b. | | | | |
| 5. Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other | 9 | | 96 | 14, 15 |

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| factor, without performing the indicated multiplication. | | | | |
| b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1. | 1 | | 6 | 10 |
| 6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | 1 | 4–6 | | 10 |
| 7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. | | | | 6 |
| b. | | | | |
| c. | | | | |
| Grade 5 Measurement and Data 5.MD Convert like measurement units within a given measurement system. 1. Convert among different-sized standard measurement units within a given measurement | 2, 4 | 45 | 70, 154 | |

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| system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. | | | | |
| Represent and interpret data. 2. | | | | |
| Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. 3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. | | | | 12 |
| b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. | | | | 12 |
| 4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. | | | | 12 |
| 5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. | | | | 12 |

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| b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems. | | | | 12, 13 |
| c. | | | | |
| Grade 5 Geometry 5.G Graph points on the coordinate plane to solve real-world and mathematical problems. 1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). | 9 | 94, 95 | 357 | |
| 2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. | 9 | 94, 95 | 357 | |
| Classify two-dimensional figures into categories based on their properties. | | | | |

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| 3. | | | | |
| 4. | | | | |
| Grade 6 Ratios and Proportional Relationships 6.RP Understand ratio concepts and use ratio reasoning to solve problems. | 1, 6, 8, 9 | 96 | 6, 16, 240, 325 | 14, 15 |
| 1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. | | | | |
| 2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. | 3, 4 | 28–30 | 108, 154 | |
| 3. a. | | | | |
| b. Solve unit rate problems including those involving unit pricing and constant speed. | 3, 4 | 28–30 | 108, 154 | |
| c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. | 1, 5, 7, 10, 11, 12 | 57, 58, 106 | 5, 6, 193, 194, 274, 280, 457–458, 499–500 | 8, 9 |
| d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. | 2, 4 | 44–45 | 70, 154 | |
| Grade 7 Ratios and Proportional Relationships 7.RP Analyze proportional relationships and use them to solve real-world and mathematical problems. | 3, 4, 5 | 28–30 | 108, 154, 193 | |
| 1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other | | | | |

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| quantities measured in like or different units. | | | | |
| 2. Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. | 1 | 4 | 6, 16 | 14, 15 |
| b. | | | | |
| c. Represent proportional relationships by equations. | 1, 6 | 4–6 | 6, 16, 240 | 14, 15 |
| d. | | | | |
| 3. Use proportional relationships to solve multistep ratio and percent problems. | 1, 5, 6, 7, 8, 10, 11, 12 | 4–6, 57–58, 106 | 6, 16, 193, 194, 239–240, 280, 324–325, 457–458, 499–500 | 14, 15 |
| Grade 6 The Number System 6.NS Apply and extend previous understandings of multiplication and division to divide fractions by fractions. | | | | |
| 1. Compute fluently with multi-digit numbers and find common factors and multiples. | | | | |
| 2. Fluently divide multi-digit numbers using the standard algorithm. | 2, 6, 7, 12 | 67, 78–80 | 64–66, 70, 279, 499–500 | 4 |
| 3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. | 2, 3, 4, 5, 6, 12 | 16–18, 30, 45, 46, 57, 58 | 65, 66, 240, 499–500 | 7, 8, 9, 14, 15 |

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| 4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. | | | | 6 |
| Apply and extend previous understandings of numbers to the system of rational numbers. 5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. | 12 | 134–136 | 499 | |
| 6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite. | 12 | 134–135 | | |
| b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the | 9 | 94, 95 | 357 | |

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| coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. | | | | |
| c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. | 12 | 134–135 | | |
| 7. a. | | | | |
| b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. | 7 | 80 | | |
| c. | | | | |
| d. | | | | |
| 8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. | 9 | 94, 95 | 357 | |
| Grade 7 The Number System 7.NS Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. 1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities | 12 | 134–135 | | |

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| combine to make 0. | | | | |
| b. Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. | 12 | 134–135 | | |
| c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. | 12 | 134–136 | | |
| d. Apply properties of operations as strategies to add and subtract rational numbers. | 12 | 134–136 | | |
| 2. a. | | | | |
| b. | | | | |
| c. Apply properties of operations as strategies to multiply and divide rational numbers. | 4, 5, 10 | 45, 106 | 193 | 8, 9, 10, 22, 24, 25 |
| d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. | 1, 5, 10, 12 | 5, 6, 57–58, 106 | 193, 499–500 | 8, 9, 10, 22, 24, 25 |
| 3. Solve real-world and mathematical problems involving the four operations with rational numbers. | 1, 3, 4, 5, 6, 10, 12 | 4–6, 28–30, 45–46, 57–58, 106 | 64–66, 70, 193, 239–240, 499–500 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 25 |
| Grade 6 Expressions and Equations 6.EE | | | | |

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| Apply and extend previous understandings of arithmetic to algebraic expressions. | | | | |
| 1. | | | | |
| 2. Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. | 1, 3, 6 | 5, 28, 63 | 229 | 22 |
| b. | | | | |
| c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). | 2, 6 | 16–18, 63 | 59, 63–66, 229 | 11, 12, 13, 23 |
| 3. Apply the properties of operations to generate equivalent expressions. | 6 | 63 | 229 | |
| 4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). | 1, 6 | 63 | 6, 16, 229 | |
| Reason about and solve one-variable equations and inequalities. | | | | |
| 5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. | 6 | 63 | 229 | 11, 12, 23, 25 |
| 6. Use variables to represent numbers and write | 1, 3, 6 | 5, 28, 63 | 229 | 22, 23, 24, 25 |

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| expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. | | | | |
| 7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers. | 1, 3, 6, 8 | 4–6, 28, 64, 84 | 229 | |
| 8. | | | | |
| Represent and analyze quantitative relationships between dependent and independent variables. 9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. | | | | 21 |
| Grade 7 Expressions and Equations 7.EE Use properties of operations to generate equivalent expressions. 1. | | | | |
| 2. | | | | |
| Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | 2, 3, 4, 5, 6, 8, 10, 12 | 28–30, 45–46, 57–58, 67, 84–85 | 64–66, 108, 154, 193, 239–240, 412, 499– | 1–10, 14, 15, 21–25 |

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| 3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. | | | 500 | |
| 4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. | 6 | 63 | 229 | 14, 15, 21, 22, 23, 24, 25 |
| b. | | | | |
| Grade 6 Geometry 6.G Solve real-world and mathematical problems involving area, surface area, and volume. 1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. | 2 | 16–18 | 59, 63–66, 70 | |

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| 2. | | | | |
| 3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. | 9 | | 357 | |
| 4. | | | | |
| Grade 7 Geometry 7G Draw, construct, and describe geometrical figures and describe the relationships between them. 1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. | 9 | 96 | | 14, 15 |
| 2. | | | | |
| 3. | | | | |
| Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. 4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. | 2 | 16, 18 | | |
| 5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. | 6 | | 240 | |
| 6. Solve real-world and mathematical problems | 2 | 16–18 | 59, 63, 64–66, | 11, 12, 13, 23 |

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| involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. | | | 70 | |
| Grade 6 Statistics and Probability 6.SP Develop understanding of statistical variability. 1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. | 3 | | 118 | |
| 2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. | 7 | 78–80 | 279 | 16, 17, 18, 24 |
| 3. | | | | |
| Summarize and describe distributions. 4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots. | 10, 11 | 122–126 | 412, 456 | |
| 5. Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. | 3 | | 118 | |
| b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. | 3 | | 118 | |
| c. Giving quantitative measures of center (median and/or mean) and variability (inter-quartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. | 7 | 78–80 | 279 | 16, 17, 18, 24 |

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| d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. | 7 | 78–79 | | |
| Grade 7 Statistics and Probability 7.SP Use random sampling to draw inferences about a population. 1. | | | | |
| 2. | | | | |
| Draw informal comparative inferences about two populations. 3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. | 11 | | 448–451 | |
| 4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. | 7 | 78–80 | 279 | 16, 17, 18, 24 |
| Investigate chance processes and develop, use, and evaluate probability models. 5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. | 1 | 5, 6 | | 19, 20 |

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| 6. | | | | |
| 7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. | 1 | 4–6 | | 19, 20 |
| b. | | | | |
| 8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. | 1 | 6 | | |
| b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event. | 1, 6 | 3 | 6, 232 | |
| c. | | | | |