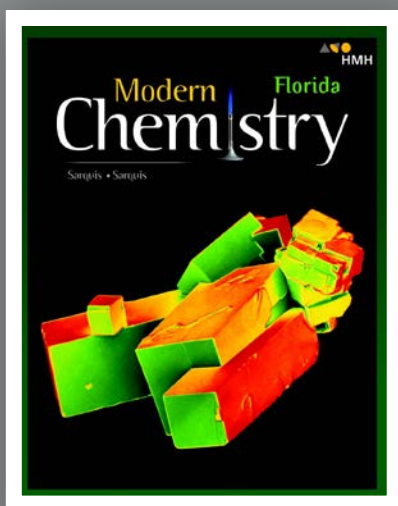


Correlation to the
Florida Course Description for
Chemistry 1
Course Code 2003340



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BID ID:	<u>3264</u>
SUBMISSION TITLE:	<u>HMH Florida Modern Chemistry ©2019</u>
GRADE LEVEL:	<u>9–12</u>
COURSE TITLE:	<u>Chemistry 1</u>
COURSE CODE:	<u>20003340</u>
ISBN:	<u>9781328831279'</u>
PUBLISHER:	<u>Houghton Mifflin Harcourt</u>
PUBLISHER ID:	<u>04145603001</u>

BENCHMARK CODE	BENCHMARK	LESSONS WHERE STANDARD/BENCHMARK IS DIRECTLY ADDRESSED IN MAJOR TOOL (MOST IN-DEPTH COVERAGE LISTED FIRST) (Include the student edition and teacher edition with the page numbers of lesson, a link to lesson, or other identifier for easy lookup by reviewers.)
SC.912.L.18.12	Discuss the special properties of water that contribute to Earth’s suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.	<p>SE: Section 10.4, pp. 335-336; Section 10.5, pp. 337-341, Section 10.5 Formative Assessment, p 341 (#2, 4, 6); Chapter 10 Review, pp. 345 (#24); Chapter 14: Cross-Disciplinary S.T.E.M.: Acid Water – The Hidden Menace, p. 459; Chapter 15 Cross-Disciplinary Connection: Liming Streams, p. 490; Section 16.1, p. 510; Chapter 16 Review, p. 534 (#45); Section 18.3, p. 581</p> <p>TE: Section 10.4, pp. 335-336; Section 10.5, pp. 337-341, Section 10.5 Formative Assessment, p 341 (#2, 4, 6); Chapter 10 Review, pp. 345 (#24); Chapter 14: Cross-Disciplinary S.T.E.M.: Acid Water – The Hidden Menace, p. 459; Chapter 15 Cross-Disciplinary Connection: Liming Streams, p. 490; Section 16.1, p. 510; Chapter 16 Review, p. 534 (#45); Section 18.3, p. 581</p> <p>Science Standards Guide: SE: pp. 46-47 TE: pp. 88-91</p> <p>Online Lab: QuickLab: Wetting a Surface (10.5)</p> <p>Additional Online Resources: Animated Chemistry: Unique Properties of Water (10.5)</p>

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SC.912.N.1.1	<p>Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:</p> <ol style="list-style-type: none"> 1. pose questions about the natural world, 2. conduct systematic observations, 3. examine books and other sources of information to see what is already known, 4. review what is known in light of empirical evidence, 5. plan investigations, 6. use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs), 7. pose answers, explanations, or descriptions of events 8. generate explanations that explicate or describe natural phenomena (inferences), 9. use appropriate evidence and reasoning to justify these explanations to others, 10. communicate results of scientific investigations, and 11. evaluate the merits of the explanations produced by others. 	<p><i>This Benchmark is fully covered throughout the program. The following are some of the many examples.</i></p> <p>SE: Section 1.1, p. 7 (QuickLab); Section 2.1, p. 43 (QuickLab); Section 3.1, p. 73 (QuickLab); Section 4.2, p. 106 (QuickLab); Section 5.1, p. 134 (QuickLab); Section 8.2, p. 276 (QuickLab); Section 9.3, p. 306 (QuickLab); Section 11.4, p. 375 (QuickLab); Section 12.1, p. 391 (QuickLab); Section 14.1, p. 454 (QuickLab); Section 15.2, p. 494 (QuickLab); Section 17.2, p. 554 (QuickLab); Section 19.3, p. 617 (QuickLab)</p> <p>TE: Section 1.1, p. 7 (QuickLab); Section 2.1, p. 43 (QuickLab); Section 3.1, p. 73 (QuickLab); Section 4.2, p. 106 (QuickLab); Section 5.1, p. 134 (QuickLab); Section 8.2, p. 276 (QuickLab); Section 9.3, p. 306 (QuickLab); Section 11.4, p. 375 (QuickLab); Section 12.1, p. 391 (QuickLab); Section 14.1, p. 454 (QuickLab); Section 15.2, p. 494 (QuickLab); Section 17.2, p. 554 (QuickLab); Section 19.3, p. 617 (QuickLab)</p> <p>Science Standards Guide: SE: pp. 44-45 TE: pp. 84-87</p> <p>Online Labs (the following are some of the many labs that cover the standard): Open Inquiry Labs: Repulsion Compulsion (Section 6.5); The Formula for Delicious (Section 7.1); Getting a Reaction (Section 8.1); Stoichiometry (Section 9.3); Why Are the Fish Dying? (Section 11.3); I've Got a Secret (Section 14.3); To Grow or Not to Grow (Section 15.1); Reaction Action (Section 17.2); Strike a Balance (Section 18.3); Core Skill Lab(s): Conservation of Mass (3.3); Is It an Acid or a Base? (14.1)</p>
SC.912.N.1.2	Describe and explain what characterize science and its methods.	<p>SE: Section 1.1, pp. 3-9</p> <p>TE: Section 1.1, pp. 3-9</p>
SC.912.N.1.4	Identify sources of information and assess their reliability according to the strict standards of scientific investigation.	<p>SE: Section 1.1, p. 7 (Quick Lab: Reading Promotional Materials and Product Labels)</p> <p>TE: Section 1.1, p. 7 (Quick Lab: Reading Promotional Materials and Product Labels)</p>

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SC.912.N.1.5	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.	<p>SE: Chapter 4 Chemistry Explorers: pp. 114-115; Chapter 9 Chemistry Explorers: pp. 292-293; Chapter 11 Chemistry Explorers: pp. 364-365; Chapter 13, Chemistry Explorers, pp. 428-429</p> <p>TE: Chapter 4 Chemistry Explorers: pp. 114-115; Chapter 9 Chemistry Explorers: pp. 292-293; Chapter 11 Chemistry Explorers: pp. 364-365; Chapter 13, Chemistry Explorers, pp. 428-429</p>
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	<p>SE: Section 2.1, pp. 31-35; Section 3.1, p 73 (Quick Lab: Constructing a Model); Chapter 12 Review, p. 415 (#39); Chapter 15 Review, p. 506 (#38) TE: Section 2.1, pp. 31-35; Section 3.1, p 73 (Quick Lab: Constructing a Model); Chapter 12 Review, p. 415 (#39); Chapter 15 Review, p. 506 (#38)</p> <p>TE: Section 2.1, pp. 31-35; Section 3.1, p 73 (Quick Lab: Constructing a Model); Chapter 12 Review, p. 415 (#39); Chapter 15 Review, p. 506 (#38) TE: Section 2.1, pp. 31-35; Section 3.1, p 73 (Quick Lab: Constructing a Model); Chapter 12 Review, p. 415 (#39); Chapter 15 Review, p. 506 (#38)</p> <p>Online Labs: Core Skill Lab: Colored Precipitates (13.1) Forensics Lab: Extraction of Copper From Its Ore (8.3) Open Inquiry Labs: Measure for Measure (2.2), Studying What You Can't See (3.2)</p> <p>Online Student Resources: Scientific Reasoning Skill Builder: Chapter 7, pp. 109-114</p> <p>Online Teacher Resources: Scientific Reasoning Skill Builder: Chapter 7, pp. 109-114 Teacher Toolkit: Process and Inquiry Skills, pp. B11, B35-B36</p>
SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations.	<p>SE: Section 1.1, pp. 3-9; Section 2.1, pp. 31-35</p> <p>TE: Section 1.1, pp. 3-9; Section 2.1, pp. 31-35</p>
SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.	<p>SE: Section 1.1, p. 8</p> <p>TE: Section 1.1, p. 8</p>

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SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	SE: Section 2.1, pp. 31-35; Section 1 Review, p. 35 (#3); Section 3.1, pp. 69-71; Chapter 9 Chemistry Explorers: pp. 292-293 TE: Section 2.1, pp. 31-35; Section 1 Review, p. 35 (#3); Section 3.1, pp. 69-71; Chapter 9 Chemistry Explorers: pp. 292-293
SC.912.N.2.5	Describe instances in which scientists’ varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	SE: Chapter 4 Chemistry Explorers: pp. 114-115; Chapter 9 Chemistry Explorers: pp. 292-293; Chapter 11 Chemistry Explorers: pp. 364-365; Chapter 13 Chemistry Explorers, pp. 428-429; Chapter 21 Chemistry Explorers, pp. 668-669 TE: Chapter 4 Chemistry Explorers: pp. 114-115; Classroom Discussion, p. 114; Chapter 9 Chemistry Explorers: pp. 292- 293; Chapter 11 Chemistry Explorers: pp. 364-365; Chapter 13 Chemistry Explorers, pp. 428-429; Chapter 21 Chemistry Explorers, pp. 668-669
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.	SE: Section 2.1, pp. 34-35; Chapter 9 Chemistry Explorers: pp. 292-293 TE: Section 2.1, pp. 34-35; Chapter 9 Chemistry Explorers: pp. 292-293
SC.912.N.3.3	Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.	SE: Section 2.1, pp. 34-35; Section 3.1, pp. 69-71; Section 11.2, pp. 357-363; Chapter 11 Chemistry Explorers: pp. 364-365; Section 11.3, pp. 366-73 TE: Section 2.1, pp. 34-35; Section 3.1, pp. 69-71; Section 11.2, pp. 357-363; Chapter 11 Chemistry Explorers: pp. 364-365; Section 11.3, pp. 366-73
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.	SE: Section 2.1, p. 35; Section 2.1 Formative Assessment, p. 35 (#4); Chapter 2 Why it Matters: Models in Chemistry, p. 36; Chapter 2 Review, p. 64 (#3) TE: Section 2.1, p. 35; Section 2.1 Formative Assessment, p. 35 (#4); Chapter 2 Why it Matters: Models in Chemistry, p. 36; Chapter 2 Why it Matters: Demonstration and Class Discussion, p. 36; Chapter 2 Review, p. 64 (#3) Science Standards Guide: SE: pp. 6-7 TE: pp. 10-13

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SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society’s decision making.	<p>SE: Section 1.1, pp. 6, 8-9; Section 2.1, p. 31; Chapter 14 Cross-Disciplinary Connection, p. 459; Chapter 15 Cross- Disciplinary Connection, p. 490</p> <p>TE: Section 1.1, pp. 6, 8-9; Section 2.1, p. 31 (including Differentiated Instruction, Misconception Alert, and Classroom Catalyst); Chapter 11, Teaching Tip, p. 364; Chapter 14 Cross-Disciplinary Connection, p. 459; Chapter 15 Cross-Disciplinary Connection, p. 490</p>
SC.912.P.8.1	Differentiate among the four states of matter.	<p>SE: Section 1.2, pp. 11-13, 18; Chapter 1 Review, p.27 - #12-13; Section 10.1, pp. 317-320; Section 10.2, pp. 321-324; Section 10.3, pp. 325-329; Section 10.4, pp. 330-336, Section 4 Formative Assessment, p.336, #7; Chapter 10 Review, pp. 344-346: #5, 10, 35, 36, 39</p> <p>TE: Section 1.2, pp. 11-13, 18, Differentiated Instruction – Pre-AP and Demonstration, p 12; Chapter 1 Review, p. 27: #12-13; Section 10.1, pp. 317-320; Section 10.2, pp. 321-324; Section 10.3, pp. 325-329; Section 10.4, pp. 330-336, Differentiated Instruction-Below Level, p. 332, Demonstration, p.334, Section 4 Formative Assessment, p.336, #7; Chapter 10 Review, pp. 344-346: #5, 10, 35, 36, 39</p> <p>Science Standards Guide: SE: pp, 1-3 TE: pp. 1-5</p> <p>Online Lab: Core Skill Lab: “Wet” Dry Ice (10.4)</p> <p>Additional Online Resources: PhET Simulations: Gas Properties (Section 1.2), States of Matter (Chapter 1.2) Visual Concepts: Solid, Liquid, and Gas (Section 1.2)</p>

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SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter.	<p>SE: Section 1.2, pp. 11-15, Section 2 Formative Assessment, p. 18 (#1); Section 1.3, p. 22-24; Chapter 1 Review, pp. 27-28 (#9, 11, 17, 23-24, 28); Section 5.2, pp.140-142, 144-146; Section 6.3, p.189; Section 6.4, pp. 191-192; Chapter 6 Review, p. 207 (#30-31); Section 8.1, pp. 253-254; Section 10.1, pp. 318-321; Section 10.1 Formative Assessment, p. 320 (#1); Section 10.2, pp.321-324, Section 10.2 Formative Assessment, p. 324 (#2); Section 10.3, pp. 326-327; Section 10.3 Formative Assessment, p.329; Section 10.4, pp. 330-336</p> <p>TE: Section 1.2, pp. 11-15, Section 2 Formative Assessment, p. 18 (#1); Section 1.3, p. 22-24; Chapter 1 Review, pp. 27-28 (#9, 11, 17, 23-24, 28); Section 5.2, pp.140-142, 144-146; Section 6.3, p.189; Section 6.4, pp. 191-192; Chapter 6 Review, p. 207 (#30-31); Section 8.1, pp. 253-254; Section 10.1, pp. 318-321; Section 10.1 Formative Assessment, p. 320 (#1); Section 10.2, pp.321-324, Section 10.2 Formative Assessment, p. 324 (#2); Section 10.3, pp. 326-327; Section 10.3 Formative Assessment, p.329; Section 10.4, pp. 330-336</p> <p>Science Standards Guide: SE: pp. 4-5 TE: pp. 6-9</p> <p>Online Labs: Core Skill Labs: Mixture Separation (1.2), Reactivity of Halide Ions (5.2), Periodicity of Properties of Oxides (5.3), Conductivity as an Indicator of Bond Type (6.2) Quick Lab: Separating a Mixture (1.2) Standard Labs: A Lesson on Chromatography (1.2), Paper Chromatography (1.2), Paper Chromatography of Colored Markers (1.2), Separation of Mixtures (1.2), Separation of Mixtures: Mining Contract (1.2), Relative Solubility of Transition Elements (12.2)</p> <p>Additional Online Resources: PhET Simulations: Gas Properties (Section 1.2), States of Matter (Chapter 1.2), Density (Section 2.2) Virtual Labs: Separating Substances (Chapter 1), Identifying Elements (Chapter 4)</p>
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SC.912.P.8.3	Explore the scientific theory of atoms (also known as atomic theory) by describing changes in the atomic model over time and why those changes were necessitated by experimental evidence.	<p>SE: Section 3.1, pp. 69-71; Section 3.2, pp. 74-78; Section 3 Review, p. 92-94 (#1, 4-5, 32, 36, 37); Section 4.1, pp. 97-103; Section 4.2, pp. 104-106; Chapter 4 Review, p.125-127 (# 7, 9, 152-28); Section 5.1, pp. 131-135</p> <p>TE: Section 3.1, pp. 69-71; Section 3.2, pp. 74-78; Section 3 Review, p. 92-94 (#1, 4-5, 32, 36, 37); Section 4.1, pp. 97-103; Section 4.2, pp. 104-106; Chapter 4 Review, p.125-127 (# 7, 9, 152-28); Section 5.1, pp. 131-135</p> <p>Science Standards Guide SE: pp. 6-7 TE: pp. 10-13</p> <p>Additional Online Resources: PhET Simulations: Models of the Hydrogen Atom (Section 3.2), Rutherford Scattering (Section 3.2)</p>
SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom.	<p>SE: Section 3.2, pp. 74-78, Section 2 Formative Assessment, p. 78, #1; Section 3.3, pp. 79-80; Section 4.1, 102-103, Section 4.2, pp. 107-110, Section 4.3, pp. 111-113, 121</p> <p>TE: Section 3.1, Differentiated Instruction-Pre-AP, p.71, Section 3.2, pp. 74-78, Differentiated Instruction-English Learners, p.75, Section 2 Formative Assessment, p. 78, #1; Section 3.3, pp. 79-80; Section 4.1, 102-103, Section 4.2, pp. 107-110, Section 4.3, pp. 111-113, 116-121</p> <p>Science Standards Guide: SE: pp. 8-9 TE: pp. 14-17</p> <p>Additional Online Resources: Animated Chemistry: Energy Levels in Atoms (4.1), Electron Configuration (4.3) PhET Simulations: Build an Atom (Section 3.2)</p>

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SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.	<p>SE: Section 1.3, pp. 20-24; Section 4.3, pp.111-113, 116-122, Chapter 4 Review, pp.126-128, #30-38, 40, 43, 46, 48; Section5.1, pp. 133-135; Section 5.2, pp. 136-142, 144-147, Section 5.3, pp. 148-162; Chapter 5 Review, pp.165-167, #6, 8-9, 12-16, 28-29, 44-45</p> <p>TE: Section 1.3, pp. 20-24; Section 4.3, pp.111-113, 116-122, Chapter 4 Review, pp.126-128, #30-38, 40, 43, 46, 48; Section 5.1, pp. 133-135; Section 5.2, pp. 136-142, 144-147, Differentiated Instruction-Pre-AP, p. 136, Classroom Discussion and Differentiated Instruction-Inclusion, p. 137, Differentiated Instruction-Below Level, p. 139, Demonstration, p.140, Teach From Tables, p. 145, Section 5.3, pp. 148-162, Differentiated Instruction-Below Level, p.148, Teaching Tip and Differentiated Instruction-Below Level, p. 158, Chapter 5 Review, pp.165-167, #6, 8-9, 12-16, 28-29, 44-45</p> <p>Science Standards Guide: SE: pp. 10-12 TE: pp. 18-22</p> <p>Online Lab(s): Core Skill Lab(s): A Lesson on Spectroscopy (4.1), The Mendeleev Lab of 1869 (5.1), Reactivity of Halide Ions (5.2), Exploring the Periodic Table (5.2), Periodicity of Properties of Oxides (5.3) Standard Lab(s): Flame Tests (4.2), Spectroscopy and Flame Tests – Identifying Materials (4.2)</p> <p>Additional Online Resources: Animated Chemistry: Energy Levels in Atoms (4.1), ElectronConfiguration (4.3) Virtual Labs: Identifying Elements (Chapter 4)</p>
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SC.912.P.8.6	Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces.	<p>SE: Section 6.1, pp. 171-173, Section 6.2, pp. 174-175, 177-185, Section 6.3, 186-190; Section 6.4, 191-192; Section 6.5, pp. 193-203</p> <p>TE: Section 6.1, pp. 171-173, Section 6.2, pp. 174-175, 177-185, Section 6.3, 186-190; Section 6.4, 191-192; Section 6.5, pp. 193-203</p> <p>Science Standards Guide: SE 13-14, TE 23-26</p> <p>Online Labs: Core Skill Labs: Reactivity of Halide Ions (5.2), Conductivity as an Indicator of Bond Type (6.2), Chemical Bonds (6.3), Types of Bonding in Solids (6.4), Tests for Iron (II) and Iron (III) (7.2)</p> <p>Additional Online Resources Animated Chemistry: Types of Bonds (Section 6.1) Graphing Calculator Activity: TI-83/84: Bond Type PhET Lab: Molecule Shapes (Section 6.5) Virtual Labs: Determining Bond Types (Chapter 6)</p>
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.	<p>SE: Section 6.2, pp. 179-185, Section 6.5, pp. 193-199; Section 7.1, pp. 213-225, Section 1 Formative Assessment, p. 225, #2-5; Section 7.2, pp. 226-229, Section 2 Formative Assessment, p. 229, #1-3, Chapter 7 Review, pp. 246-250 (items # 3-25, 41, 44, 46, 48, 49, 58)</p> <p>TE: Section 6.2, pp. 179-185, Section 6.5, pp. 193-199, Section 7.1, pp. 213-225, Section 1 Formative Assessment, p. 225, #2-5; Section 7.2, pp. 226-229, Section 2 Formative Assessment, p. 229, #1-3, Chapter 7 Review, pp. 246-250 (items # 3-25, 41, 44, 46, 48, 49, 58)</p> <p>Science Standards Guide: SE: pp. 15-16 TE: pp. 27-30</p> <p>Online Lab: Core Skill Lab: Types of Bonding in Solids (6.4)</p> <p>Additional Online Resources: Animated Chemistry: Chemical Names and Formulas (7.1)</p>

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SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.	<p>SE: Section 8.2, pp. 268-276; Section 8.3, pp. 277-279; Chapter 8 Review, pp. 284-285 (#17-30, 35-36, 38, 43-44); Section 14.3, pp. 465-471; Section 19.1, pp. 604-607</p> <p>TE: Section 8.2, pp. 268-276; Section 8.3, pp. 277-279; Chapter 8 Review, pp. 284-285 (#17-30, 35-36, 38, 43-44); Section 14.3, pp. 465-471; Section 19.1, pp. 604-607</p> <p>Science Standards Guide: SE: pp. 17-18 TE: pp. 31-34</p>
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SC.912.P.8.9	Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.	<p>SE: Section 3.3, pp. 79-89; Section 7.3, pp. 231-238; Section 7.4, pp. 239-243; Section 9.1, pp. 289-291, Section 9.2, pp. 294-301; Section 9.3, pp. 302-305, 307-308</p> <p>TE: Section 3.3, pp. 79-89; Section 7.3, pp. 231-238; Section 7.4, pp. 239-243; Section 9.1, pp. 289-291; Section 9.2,pp. 294-301; Section 9.3, pp. 302-305, 307-308</p> <p>Science Standards Guide SE: pp. 19-20 TE: pp. 35-38</p> <p>Online Labs: Core Skill Labs: Conservation of Mass (3.3), Determining the Empirical Formula of Magnesium Oxide (7.4), How Much Calcium Carbonate is in an Eggshell (15.2), Colored Precipitates (13.1) Forensics Lab: Stoichiometry and Gravimetric Analysis (9.3) Open Inquiry Lab: Stoichiometry (9.3) QuickLab: Limiting Reactants in a Recipe (9.3) Standard Lab: Gravimetric Analysis-Hard Water Testing (9.3)</p> <p>Additional Online Resources: Virtual Labs: Determining an Empirical Formula (Chapter 7), Determining the Limiting Reactant (Chapter 9) Animated Chemistry: Avogadro’s Number (Section 3.3); Formula Mass and Molar Mass (Section 7.3); Introduction to Stoichiometry (Section 9.1); Limiting Reactants (Section 9.3) Graphing Calculator Activities: TI-83/84 Graphing Calculator Activity: Molar Mass (Chapter 7), TI-83/84 Graphing Calculator PhET Simulations: Balancing Chemical Equations (Section 8.1), Reactants, Products, and Leftovers (Section 9.3)</p>
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SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.	<p>SE: Section 14.1, pp. 449-458; Section 14.2, pp. 460-464; Section 14.3, pp. 465-471; Chapter 14 Review, p. 474-476 (#5-6, 20, 23, 43); Section 15.1, pp. 479-489; Section 15.2, pp. 491-493, 495-501; Chapter 15 Review, pp. 504-506 (#4-6, 18-21, 42)</p> <p>TE: Section 14.1, pp. 449-458; Section 14.1 Differentiated Instruction–Pre-AP, pp. 451, 455; Section 14.2, pp. 460-464; Section 14.3, pp. 465-471; Chapter 14 Review, p. 474-476 (#5-6, 20, 23, 43); Section 15.1, pp. 479-489: Section 15.1 Demonstrations, pp. 483, 484; Section 15.1 Differentiated Instruction-Inclusion, p, 484; Section 15.2, pp. 491-493, 495-501; Section 15.2 Differentiated Instruction-Below Level, p. 496; Chapter 15 Review, pp. 504-506 (#4-6, 18-21, 42)</p> <p>Science Standards Guide: SE: pp. 21-22 TE: pp. 39-42</p> <p>Online Labs: Core Skill Labs: Is it an Acid or a Base? (14.1), Hydronium Ion Concentration and pH (15.1), Household Indicators (15.2), Percentage of Acetic Acid in Vinegar (15.2), Determination of Vitamin C in Fruit Juices (15.2), How Effective are Antacids? (15.2), How Much Calcium Carbonate is in an Eggshell (15.2), Shampoo Chemistry (15.2), Titration with an Acid and a Base (15.2) Forensics Labs: Effects of Acid Rain on Plants (14.3), Wetlands Acid Spill (15.1), How do Pollutants Affect a Lake?,(15.2) Open Inquiry Lab: I’ve Got a secret (14.3) Probeware Lab: Acid-Base Titration (15.2) Quick Labs: Household Acids and Bases (14.1), Acids and Bases in the Home (15.1), Testing the pH of Rainwater (15.2) Standard Labs: Drip-Drop Acid-Base Experiment (15.2), Acid-Base Titration of an Eggshell (15.2)</p> <p>Additional Online Resources: Virtual Lab: Exploring Acids and Bases (Chapter 14) Animated Chemistry: Acid-Base Ionization (Section 15.1) PhET Simulations: Acid-Base Solutions (Section 15.1)</p>
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SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.	SE: Section 1.2, pp. 14–15; Section 6.2, p. 175; Section 16.1, pp. 509–518 TE: Section 1.2, pp. 14–15; Section 6.2, p. 175; Section 16.1, pp. 509–518 Science Standards Guide: SE: pp. 23-24 TE: pp. 43-46
SC.912.P.10.5	Relate temperature to the average molecular kinetic energy.	SE: Section 10.1, pp. 318-319; Section 10.2, p. 321; Section 16.1, p. 509-511; Section 16.2, pp. 524-527 TE: Section 10.1, pp. 318-319; Section 10.2, p. 321; Section 16.1, pp. 509-511; Section 16.1 Misconception Alert, p. 510; Section 16.2, pp.524-527 Science Standards Guide: SE: pp. 25-26 TE: pp. 47-50 Additional Online Resources: Animated Chemistry: Endothermic and Exothermic Reactions (Section 16.1)
SC.912.P.10.6	Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum.	SE: Section 16.1, pp. 512-515; Section 17.1, pp. 540-543 TE: Section 16.1, pp. 512-515, Section 17.1, pp. 540-543 Science Standards Guide: SE: pp. 27-28 TE: pp. 51-54 Additional Online Resources: PhET Simulations: States of Matter (Chapter 10)

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SC.912.P.10.7	Distinguish between endothermic and exothermic chemical processes.	<p>SE: Section 10.4, pp. 330-336; Section 16.1, pp. 512-515; Chapter 17 Review, p.558 (#3)</p> <p>TE: Section 10.4, pp. 330-336; Section 16.1, pp. 512-515, Chapter 17 Review, p.558 (#3)</p> <p>Science Standards Guide: SE: pp. 29-31 TE: pp. 55-59</p> <p>Online Lab: Forensics Lab: Evaporation and Ink Solvents (10.3)</p> <p>Additional Online Resources: Animated Chemistry: Changes of State (Section 10.1) PhET Simulations: States of Matter (Chapter 10)</p>
SC.912.P.10.9	Describe the quantization of energy at the atomic level.	<p>SE: Section 4.1, pp. 99-103, Section 4.1 Formative Assessment, p. 103 (#6); Section 4.2, pp. 107-110; Section 4.3, pp. 111-113, 116-122; Chapter 4 Review, pp. 125, 127-128 (# 8-9, 16, 19-21, 52-55, 58-59)</p> <p>TE: Section 4.1, pp. 99-103; Section 1 Formative Assessment, p. 103, #6; Section 4.2, pp. 107-110; Section 4.2 Differentiated Instruction-Pre-AP, p. 107; Section 4.3, pp. 111-113, 116-122; Chapter 4 Review, pp. 125, 127-128 (# 8-9, 16, 19-21, 52-55, 58-59)</p> <p>Science Standards Guide: SE: pp. 32-33 TE: pp. 57-60</p> <p>Online Labs: Core Skill Lab: A Lesson on Spectroscopy (4.1) Standard Labs: Flame Tests (4.1), Spectroscopy and Flame Tests – Identifying Materials (4.2)</p> <p>Additional Online Resources: Animated Chemistry: Energy Levels of an Atom (4.1) PhET Simulations: Neon Lights and Other Discharge Lamps (4.1), Photoelectric Effect (4.1) Virtual Lab: Identifying Elements (Chapter 4)</p>

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SC.912.P.10.12	Differentiate between chemical and nuclear reactions.	<p>SE: Section 8.1, pp. 253-257; Section 21.1, p. 652; Section 21.1 Formative Assessment, p. 652 (#3); Section 21.2, pp. 653-655; Section 21.4, pp. 666-667, Section 21.4 Formative Assessment, p.667 (#1, 4); Chapter 21 Review, p.672 (#11-13, 35-38, 40)</p> <p>TE: Section 8.1, pp. 253-257; Section 21.1, p. 652; Section 21.1 Formative Assessment, p. 652 (#3); Section 21.2, pp. 653-655; Section 21.4, pp. 666-667, Section 21.4 Formative Assessment, p.667 (#1, 4); Chapter 21 Review, p.672 (#11-13, 35-38, 40)</p> <p>Science Standards Guide: SE: pp. 34-35 TE: pp. 64-67</p> <p>Additional Online Resources: Animated Chemistry: Conservations in Reactions (8.2), Types of Radioactive Decay (21.2) PhET Simulations: Balancing Chemical Equations (8.1), Alpha Decay (21.2), Beta Decay (21.2), Nuclear Fission (21.4)</p>
SC.912.P.10.18	Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications.	<p>SE: Section 4.1, pp. 97-103; Section 4.1 Formative Assessment, p. 103 (#2-3); Chapter 4 Review, pp. 125, 127-128 (#1, 3-4, 5, 10-14, 42, 44-45, 47, 50, 52-53); Section 21.2, p. 655</p> <p>TE: Section 4.1, pp. 97-103; Section 4.1 Formative Assessment, p. 103 (#2-3); Chapter 4 Review, pp. 125, 127-128 (#1, 3-4, 5, 10-14, 42, 44-45, 47, 50, 52-53); Section 21.2, p. 655</p> <p>Science Standards Guide: SE: pp. 36-37 TE: pp. 68-71</p>

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SC.912.P.12.10	Interpret the behavior of ideal gases in terms of kinetic molecular theory.	<p>SE: Section 10.1, pp. 317-320; Section 10.1 Formative Assessment, p. 320 (#1-7); Chapter 10 Review, pp. 344-346 (#1-3, 5); Section 11.1, pp. 353-355; Section 11.2, pp. 357-363; Section 11.2 Formative Assessment, p. 363 (#1, 6); Section 11.3, pp. 366-373, Section 11.3 Formative Assessment, p. 373 (#1, 3); Chapter 11 Review, pp. 379-381 (# 1-3, 6, 12-17, 36-37, 78)</p> <p>TE: Section 10.1, pp. 317-320; Section 10.1 Formative Assessment, p. 320 (#1-7); Chapter 10 Review, pp. 344-346 (#1-3, 5); Section 11.1, pp. 353-355; Section 11.2, pp. 357-363; Section 11.2 Formative Assessment, p. 363 (#1, 6); Section 11.3, pp. 366-373, Section 11.3 Formative Assessment, p. 373 (#1, 3); Chapter 11 Review, pp. 379-381 (# 1-3, 6, 12-17, 36-37, 78)</p> <p>Science Standards Guide: SE: pp. 38-39 TE: pp. 72-75</p> <p>Additional Online Resources: PhET Simulations: Gas Properties (Section 1.2), States of Matter (Chapter 10)</p>
SC.912.P.12.11	Describe phase transitions in terms of kinetic molecular theory.	<p>SE: Section 10.1, p. 317; Section 10.2, p. 324; Section 10.4, pp. 330-336; Chapter 10 Review, p. 344 (#16)</p> <p>TE: Section 10.1, p. 317; Section 10.2, p. 324; Section 10.4, pp. 330-336; Chapter 10 Review, p. 344 (#16)</p> <p>Science Standards Guide: SE: pp. 40-41 TE: pp. 76-79</p> <p>Additional Online Resources: Animated Chemistry: Changes of State (10.4) PhET Simulations: Gas Properties (Section 1.2), States of Matter (Chapter 1.2, Chapter 10)</p>

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SC.912.P.12.12	Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.	<p>SE: Section 17.2, pp. 544-554, Section 17.2 Formative Assessment, p. 554 (#2-#4); Chapter 17 Why it Matters: New Generation Catalysts, p. 555; Chapter 17 Review, pp. 559-560 (#14-15, 18, 20-21); Section 23.2, pp.727-729; Appendix A, p. R52</p> <p>TE: Section 17.2, pp. 544-554, Section 17.2 Formative Assessment, p. 554 (#2-#4); Chapter 17 Why it Matters: New Generation Catalysts, p. 555; Chapter 17 Review, pp. 559-560 (#14-15, 18, 20-21); Section 23.2, pp.727-729; Appendix A, p. R52</p> <p>Science Standards Guide: SE: pp. 42-43 TE: pp. 80-83</p> <p>Online Labs: Core Skill Lab: Rate of a Chemical Reaction (17.2) Forensics Lab: A Leaky Reaction (17.2) Open Inquiry Lab: Reaction Action (17.2) Quick Labs: Factors Influencing Reaction Rate (17.2), Concentration Affects Reaction Rate (17.2) Standard Labs: Clock Reactions (17.2), Observing Enzyme Detergents (17.2), Reaction Rates (17.3)</p> <p>Additional Online Resources: Virtual Labs: Exploring Reaction Rates (Chapter 17) Animated Chemistry: Factors that Affect the Rate of Reactions (17.1) PhET Simulations: Reactions and Rates (Section 17.2)</p>
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SC.912.P.12.13	Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.	<p>SE: Section 10.4, pp. 330-333; Section 10.4 Formative Assessment, p. 336 (# 1-2, 4); Section 12.2, pp. 393-396, 399-402; Chapter 12 Review, p. 413 (#10-13); Section 18.1, pp. 563-569; Section 18.2, pp. 572-578; Section 18.4, 587-594</p> <p>TE: Section 10.4, pp. 330-333; Section 10.4 Formative Assessment, p. 336 (# 1-2, 4); Section 12.2, pp. 393-396, 399-402; Chapter 12 Review, p. 413 (#10-13); Section 18.1, pp. 563-569; Section 18.2, pp. 572-578; Section 18.4, 587-594</p> <p>Science Standards Guide: SE: pp. 44-45 TE: pp. 84-87</p> <p>Online Labs: Core Skill Labs: Equilibrium (18.2), Solubility Product Constant (18.4) Forensics Lab: A Solubility Product Constant – Algal Blooms (18.4) Probeware Lab: The Buffer in Lemonade (18.3)</p> <p>Additional Online Resources: Virtual Lab: Investigating Dynamic Equilibrium (Chapter 18) Animated Chemistry: Dynamic Equilibrium (18.1) Graphing Calculator Activities: TI-83/84 Graphing Calculator Activity: Chemical Equilibrium, TI-83/83 Graphing Calclator Activity Guide Sheet: Chemical Equilibrium PhET Simulations: Reversible Reactions (8.2)</p>
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LAFS.1112.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.	<p>This Benchmark is fully covered with <i>Check for Understanding</i> and <i>Critical Thinkining</i> questions throughout the textbook. The following are some of the many examples.</p> <p>SE: pp. 23, 42, 76, 149, 583, 695, 717</p> <p>TE: pp. 23, 42, 76, 149, 583, 695, 717</p> <p>Online Lab(s): Core Skill Lab(s): Constructing a Heating/Cooling Curve (10.4), Mass and Density of Air at Different Pressures (11.1), Rate of a Chemical Reaction (17.2), Simulation of Nuclear Decay Using Pennies and Paper (21.2) Probeware Labs: Analyzing Graphs and Establishing Relationships (2.3), Find the Relationship: An Exercise in Graphing Analysis (2.3), Air Pressure and Piston Design (11.1) STEM Labs: Living in a Thirsty World (1.2), Modeling Radioactive Decay on a Computer (21.2)</p> <p>Online Student Resources: Scientific Reasoning Skill Builder, Chapter 7, Section 7-5, Exercise 10, pp. 122–124</p>
LAFS.1112.RST.1.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.	<p>SE: 28 (#30), 381 (#53), 744 (#43), R17</p> <p>TE: 28 (#30), 48 (Reading Toolkit), 77 (Alternative Assessment), 84 (Reading Toolkit), 142 (Reading Toolkit), 214 (Reading Toolkit), 373 (Reading Toolkit), 381 (#53), 431 (Reading Toolkit), 439 (Reading Toolkit), 499 (Reading Toolkit), 610 (Reading Toolkit), 744 (#43), R17</p>

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LAFS.1112.RST.1.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	<p>SE: 384 (#93), 506 (#43), 534 (#45, #47), 616</p> <p>TE: 384 (#93), 506 (#43), 534 (#45, #47), 616</p> <p>Science Standards Guide: SE: pp. 44-45 TE: pp. 84-87</p> <p><i>The benchmark is covered throughout the lab program. The following are examples:</i></p> <p>Online Labs: Section 2.3 Core Skill Lab: Accuracy and Precision in Measurements; Section 2.2. Open Inquiry Lab: Measure for Measure; Section 3.2 Open Inquiry Lab: Studying What You Can’t See; Vernier Probeware Lab: Find the Relationship: An Exercise in Graphing Analysis; Section 11.1; Section 11.2 Vernier Probeware Lab: Boyle’s Law: Pressure-Volume Relationship in Gases; Section 12.2 Vernier Probeware Lab: Effect of Temperature on Solubility of a Salt; Section 14.1 Core Skill Lab: Is It an Acid or a Base?; Section 9.3. Open Inquiry Lab: Stoichiometry; Section 9.3 Forensics Lab: Stoichiometry and Gravimetric Analysis; Section 11.3 Open Inquiry Lab: Why Are the Fish Dying?; Section 15.1 Open Inquiry Lab: To Grow or Not to Grow; Section 1.2 STEM Lab: Living in a Thirsty World; Section 13.2 STEM Lab: The Heat is ON!; Section 16.1 STEM Lab: A Burning Interest; Section 20.2 STEM Lab: Store Charge; Section 22.2 STEM Lab: Cleaning Up Oil Spills; Section 23.2 STEM Lab: Say Cheese!</p>
LAFS.1112.RST.2.4	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 relevant to grades 11–12 texts and topics.	<p>SE: xxxi, 28 (#25), 166 (#24), 185 (#1), 680 (#3), R15</p> <p>TE: xxxi, 28 (#25), 70 (Reading Toolkit), 108 (Differentiated Instruction), 166 (#24), 185 (#1), 259 (Problem Solving), 461 (Reading Toolkit), 680 (#3), R15</p> <p>Online Teacher Resources: Teacher Toolkit Section D—Vocabulary Strategies, pp. D25–D31</p>
LAFS.1112.RST.2.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.	<p>SE: 28 (#34), 384 (#85), R8–R12, R15</p> <p>TE: 28 (#34), 107 (Alternative Assessment), 268 (Reading Toolkit), 324 (Alternative Assessment), 330 (Reading Toolkit), 366 (Differentiated Instruction), 384 (#85) , 409 (Alternative Assessment), 572 (Differentiated Instruction—Pre-AP), 579 (Reading Toolkit), 701 (Reading Toolkit), R8–R12, R15</p>

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LAFS.1112.RST.2.6	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.	SE: 210 (#74) TE: 210 (#74), 572 (Differentiated Instruction—Pre-AP) Online Lab: Core Skill Lab: How Effective Are Antacids? (15.2)
LAFS.1112.RST.3.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.	Science Standards Guide: SE 46-47, TE 88-91 Online Labs: STEM Lab: Modeling Radioactive Decay on a Computer (21.2) Virtual Labs: Chapter 1 Virtual Lab: Separating Substances; Chapter 14 Virtual Lab: Exploring Acids and Bases
LAFS.1112.RST.3.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.	SE: 210 (#74), 476 (#38) TE: 210 (#74), 476 (#38), 572 (Differentiated Instruction—Pre-AP) Online Labs: Core Skill Lab: How Effective Are Antacids? (15.2) Virtual Labs: Chapter 1 Virtual Lab: Separating Substances; Chapter 14 Virtual Lab: Exploring Acids and Bases; Chapter 21 Virtual Lab: Exploring Radioactivity
LAFS.1112.RST.3.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	TE: 572 (Differentiated Instruction—Pre-AP) Science Standards Guide: SE: pp. 46-47 TE: pp. 88-91 Online Lab: Core Skill Lab: How Effective Are Antacids? (15.2) STEM Lab: Modeling Radioactive Decay on a Computer (21.2)

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LAFS.1112.RST.4.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.	<p>SE: 24(#5), 128 (#58), 210(#74), 476(#38)</p> <p>TE: 24 (#5), 107 (Alternative Assessment), 128 (#58), 210 (#74), 268 (Reading Toolkit), 324 (Alternative Assessment), 330 (Reading Toolkit), 366 (Differentiated Instruction), 409 (Alternative Assessment), 419 (Reading Toolkit), 476 (#38), 572 (Differentiated Instruction—Pre-AP), 579 (Reading Toolkit), 701 (Reading Toolkit)</p>
LAFS.1112.SL.1.1	<p>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.</p> <p>a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.</p> <p>c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.</p> <p>d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.</p>	<p>TE: 338 (Classroom Discussion), 471 (Classroom Discussion), 523 (Classroom Discussion), 565 (Classroom Discussion), 636 (Classroom Discussion), 663 (Classroom Discussion)</p> <p>Science Standards Guide: SE: pp. 10-11 TE: pp. 18-22</p> <p>Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2)</p>

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LAFS.1112.SL.1.2	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	TE: 338(Classroom Discussion), 636 (Classroom Discussion), 663 (Classroom Discussion) Science Standards Guide: SE: pp. 46-47 TE: pp. 88-91 Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2)
LAFS.1112.SL.1.3	Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	TE: 6 (Classroom Discussion)
LAFS.1112.SL.2.4	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.	TE: p. 12 (Differentiated Instruction), 115 (Alternative Assessment), 326 (Classroom Discussion); p. 338 (Classroom Discussion); p. 459 (Alternative Assessment); p. 523 (Classroom Discussion) Science Standards Guide: SE: pp. 46-47 TE: pp. 88-91 Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2)
LAFS.1112.SL.2.5	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.	TE: p. 12 (Differentiated Instruction) Science Standards Guide: SE: pp. 6-7, 46-47 TE: pp. 10-13, 88-91 Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2)

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LAFS.1112.WHST.1.1	<p>Write arguments focused on discipline-specific content.</p> <p>a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.</p> <p>b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values, and possible biases.</p> <p>c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p>d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>e. Provide a concluding statement or section that follows from or supports the argument presented.</p>	<p>SE: p. 622 (#28)</p> <p>TE: p. 622 (#28)</p> <p>Online Labs: Section 2.1 Forensics Lab: The Hit and Run — see Post-Lab Question #1; Section 1.2 STEM Lab: Living in a Thirsty World; Section 13.2 STEM Lab: The Heat is ON!; Section 16.1 STEM Lab: A Burning Interest; Section 20.2 STEM Lab: Store Charge; Section 22.2 STEM Lab: Cleaning Up Oil Spills; Section 23.2 STEM Lab: Say Cheese!; Section 3.2 Open Inquiry Lab: Studying What You Can’t See</p> <p>Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper</i></p>
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LAFS.1112.WHST.1.2	<p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p> <p>c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p>d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.</p> <p>e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).</p>	<p>SE: p. 416 (#44), p. 534 (#45)</p> <p>TE: p. 416 (#44); p. 534 (#45)</p> <p>Science Standards Guide: SE: pp. 44-45 TE: pp. 84-87</p> <p>Online Labs: Section 1.2 STEM Lab: Living in a Thirsty World; Section 13.2 STEM Lab: The Heat is ON!; Section 16.1 STEM Lab: A Burning Interest; Section 20.2 STEM Lab: Store Charge; Section 22.2 STEM Lab: Cleaning Up Oil Spills; Section 23.2 STEM Lab: Say Cheese!; Section 2.2. Open Inquiry Lab: Measure for Measure; Section 3.2 Open Inquiry Lab: Studying What You Can’t See; Section 9.3. Open Inquiry Lab: Stoichiometry; Section 11.3 Open Inquiry Lab: Why Are the Fish Dying?; Section 15.1 Open Inquiry Lab: To Grow or Not to Grow</p> <p>Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper, Writing a Lab Report</i></p>
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LAFS.1112.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	<p>SE: 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45)</p> <p>TE: 4 (Differentiated Instruction), 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45)</p> <p>Science Standards Guide: SE: pp. 44-45 TE: pp. 84-87</p> <p>Online Labs: Section 1.2 STEM Lab: Living in a Thirsty World; Section 13.2 STEM Lab: The Heat is ON!; Section 16.1 STEM Lab: A Burning Interest; Section 20.2 STEM Lab: Store Charge; Section 22.2 STEM Lab: Cleaning Up Oil Spills; Section 23.2 STEM Lab: Say Cheese!; Section 2.2. Open Inquiry Lab: Measure for Measure; Section 3.2 Open Inquiry Lab: Studying What You Can’t See; Section 9.3. Open Inquiry Lab: Stoichiometry; Section 11.3 Open Inquiry Lab: Why Are the Fish Dying?; Section 15.1 Open Inquiry Lab: To Grow or Not to Grow</p> <p>Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper, Writing a Lab Report</i></p>
LAFS.1112.WHST.2.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	<p>Online Labs: Section 2.2. Open Inquiry Lab: Measure for Measure; Section 3.2 Open Inquiry Lab: Studying What You Can’t See; Section 9.3. Open Inquiry Lab: Stoichiometry; Section 11.3 Open Inquiry Lab: Why Are the Fish Dying?; Section 15.1 Open Inquiry Lab: To Grow or Not to Grow</p> <p>Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper</i></p>

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LAFS.1112.WHST.2.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	TE: 12 (Differentiated Instruction Activity—Pre-AP activity) Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2) Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper</i>
LAFS.1112.WHST.3.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	SE: 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45) TE: 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45) Science Standards Guide: SE: pp. 6-7, 16 (Extension activity), 44-45 TE: pp. 10-13, 30 (Extension activity), 84-87 Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2) Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper</i>
LAFS.1112.WHST.3.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.	SE: 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45) TE: 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45) Science Standards Guide: SE: pp. 6-7 TE: pp. 10-13 Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper</i>

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LAFS.1112.WHST.3.9	Draw evidence from informational texts to support analysis, reflection, and research.	<p>SE: 98 (Critical Thinking), 210 (#74), 583 (Check for Understanding)</p> <p>TE: 98 (Critical Thinking), 210 (#74), 568 (Differentiated Instruction—Pre-AP), 583 (Check for Understanding)</p> <p>Science Standards Guide: SE: pp. 10-12 TE: pp. 18-22</p> <p>Online Labs: Core Skill Lab: How Effective Are Antacids? (15.2) STEM Lab: Modeling Radioactive Decay on a Computer (21.2)</p> <p>Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper</i></p>
LAFS.1112.WHST.4.10	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.	<p>SE: 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45)</p> <p>TE: 4 (Differentiated Instruction), 128 (#57, 58), 383 (#81, 82), 416 (#44), 506 (#41), 534 (#45)</p> <p>Online Lab: STEM Lab: Modeling Radioactive Decay on a Computer (21.2)</p> <p>Online Teacher Resources: Online Teacher Tools—Classroom Management Resources: <i>Research Paper, Writing a Lab Report</i></p>

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MAFS.912.F-IF.2.4	<p>For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</p>	<p><i>This Benchmark is fully covered throughout the program. The following are some of the many examples.</i></p> <p>SE: Section 2.3, Critical Thinking, p. 61; Section 11.1, Critical Thinking, pp. 358, 360-361; Section 15.2 Formative Assessment, p.501 (#4); Appendix C: Math Skills Handbook and Chemistry Equations, pp. R94-R96</p> <p>TE: Section 2.3, Critical Thinking, p. 61; Section 11.1, Critical Thinking, pp. 358, 360-361; Appendix C: Math Skills Handbook and Chemistry Equations, pp. R94-R96</p> <p>Online Labs: Core Skill Labs: Constructing a Heating/Cooling Curve (10.4), Mass and Density of Air at Different Pressures (11.1), Rate of a Chemical Reaction (17.2), Simulation of Nuclear Decay Using Pennies and Paper (21.2) Probeware Labs: Analyzing Graphs and Establishing Relationships (2.3), Find the Relationship: An Exercise in Graphing Analysis (2.3), Air Pressure and Piston Design (11.1) STEM Labs: Living in a Thirsty World (1.2), Modeling Radioactive Decay on a Computer (21.2)</p> <p>Additional Online Resources: Graphing Calculator Activities: TI-Nspire Graphing Calculator Activity: Graphing and Regression Analysis (Chapter 2)</p>
MAFS.912.F-IF.3.7	<p>Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.</p> <p>a. Graph linear and quadratic functions and show intercepts, maxima, and minima.</p> <p>b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</p> <p>c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.</p> <p>d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.</p> <p>e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.</p>	<p>Science Standards Guide: SE 48-49, TE 92-95</p> <p>Online Lab: Probeware Lab: Analyzing Graphs and Establishing Relationships (2.3)</p> <p>Additional Online Resources: Graphing Calculator Activities: TI-Nspire Graphing Calculator Activity: Graphing and Regression Analysis (Chapter 2), TI-83/84 Graphing Calculator Activity: Acid-Base Titration, TI-83/84 Graphing Calculator Activity Guide Sheet: Acid-Base Titration, and TI-Nspire Graphing Calculator Activity: Titration of a Strong Acid and a Weak Acid with a Strong Base (Chapter 15); TI-83/84 Graphing Calculator Activity: Chemical Equilibrium, TI-83/84 Graphing Calculator Activity Guide Sheet: Chemical Equilibrium, and TI-Nspire Graphing Calculator Activity: Ionization of a Weak Acid: Calculation of [H+] and Percent Ionization (Chapter 18)</p>

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MAFS.912.N-Q.1.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	<p><i>This Benchmark is fully covered throughout the program. The following are some of the many examples.</i></p> <p>SE: Chapter 1, Math Tutor, p. 25; Appendix D: Problem Bank, Conversions: Ch.2, Sec. 2, pp. R100-R101, Four Steps for Solving Quantitative Problems: Chap. 2, Sec. 3, pp. R104-R105, Mole Concept: Chap. 3, Sec. 3 and Chap.7, Sec. 3, pp.R105-R107</p> <p>TE: Chapter 1, Math Tutor, p. 25; Appendix D: Problem Bank, Conversions: Ch.2, Sec. 2, pp. R100-R101, Four Steps for Solving Quantitative Problems: Chap. 2, Sec. 3, pp. R104-R105, Mole Concept: Chap. 3, Sec. 3 and Chap.7, Sec. 3, pp.R105-R107</p> <p>Online Labs: Core Skill Labs: Accuracy in Precision and Measurement (2.3), Determining the Empirical Formula of Magnesium Oxide (7.4), Mass and Density of Air at Different Pressures (11.1), Measuring Ka for Acetic Acid (18.3) Probeware Lab: Air Pressure and Piston Design (11.1) Quick Labs: Density of Pennies (2.2), Thickness of Aluminum Foil (2.2) Standard Lab: Specific Heat (2.3)</p> <p>Additional Online Resources: Virtual Labs: Using Units and Measurements (Chapter 2)</p>
MAFS.912.N-Q.1.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	<p><i>This Benchmark is fully covered throughout the program. The following are some of the many examples .</i></p> <p>SE: Section 2.3, pp. 48-49, Solving Problems Using the Four-Step Approach, p. 58, Chapter 2 Review, p.65 (#24-25, 28, 35-36, 51)</p> <p>TE: Section 2.3, pp. 48-49, Solving Problems Using the Four-Step Approach, p. 58, Chapter 2 Review, p.65 (#24-25, 28, 35-36, 51)</p> <p>Online Labs: Core Skill Lab: Accuracy and Precision in Measurements (2.3) Probeware Lab: Air Pressure and Piston Design (11.1) Standard Lab: Specific Heat (2.3)</p>

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MAFS.912.S-ID.1.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	SE: Section 5.3, pp. 150, 152, 156, 160, Section 3 Formative Assessment, p. 162, #4 TE: Section 5.3, pp. 150, 152, 156,160, Problem Solving-Take it Further, p. 150, Teach From Visuals, p. 152, Differentiated Instruction-Pre-AP, p. 152, Teaching Tip and Differentiated Instruction –Below Level, p. 156, Section 3 Formative Assessment, p. 162, #4 Science Standards Guide: SE: pp. 50-51 TE: pp. 96-99 Online Lab: Standard Lab: The Percentage of Water in Popcorn (2.3)
MAFS.912.S-ID.1.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Science Standards Guide: SE: pp. 52-53 TE: pp. 100-103
MAFS.912.S-ID.1.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Science Standards Guide: SE: pp. 54-55 TE: pp. 104-107
MAFS.912.S-ID.1.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	SE: Appendix C: Math Skills Handbook and Chemistry Equations, pp. R93-R94 TE: Appendix C: Math Skills Handbook and Chemistry Equations, pp. R93-R94 Science Standards Guide: SE: pp. 56-57 TE: pp. 108-111

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MAFS.912.S-ID.2.5	<p>Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies).</p> <p>Recognize possible associations and trends in the data.</p>	<p><i>This Benchmark is fully covered throughout the program. The following are some of the many examples.</i></p> <p>SE: Section 5.3, pp. 152-153, 156, 160; Section 5.3 Formative Assessment, p. 162 (#4)</p> <p>TE: Section 5.3, pp. 152-153, 156, 160; Section 5.3 Formative Assessment, p. 162 (#4)</p> <p>Online Labs: Core Skill Lab: Exploring the Periodic Table (5.3) Probeware Labs: Find the Relationship: An Exercise in Graphing Analysis (2.3), Air Pressure and Piston Design (11.1) Standard Lab: Specific Heat (2.3)</p> <p>Additional Online Resources: Graphing Calculator Activities: TI-83/84 Graphing Calculator Activity: Atomic Radii, TI-83/84 Graphing Calculator Activity Guide: Atomic Radii, TI-Nspire Graphing Calculator Activity: Periodicity: Atomic Radii and Atomic Number (Chapter 5)</p>
MAFS.912.S-ID.2.6	<p>Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</p> <p>a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, and exponential models.</p> <p>b. Informally assess the fit of a function by plotting and analyzing residuals.</p> <p>c. Fit a linear function for a scatter plot that suggests a linear association.</p>	<p>Online Labs: Probeware Labs: Find the Relationship: An Exercise in Graphing Analysis (2.3), Air Pressure and Piston Design (11.1) Standard Lab: Specific Heat (2.3)</p> <p>Additional Online Resources: Graphing Calculator Activities: TI-Nspire Graphing Calculator Activity: Graphing and Regression Analysis (Chapter 2), TI-83/84 Graphing Calculator Activity: Atomic Radii, TI-83/84 Graphing Calculator Activity Guide: Atomic Radii, TI-Nspire Graphing Calculator Activity: Periodicity: Atomic Radii and Atomic Number (Chapter 5)</p>

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ELD.K12.ELL.SC.1	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.	<p>SE: Strategies for English Language Learners, pp. xxii-xxvii</p> <p>TE: Strategies for English Language Learners, pp. xxii-xxvii; Section 2.3, Differentiated Instruction: English Learners, p. 59; Section 3.2, Differentiated Instruction: English Learners, p. 75; Section 5.1, Differentiated Instruction: English Learners, p. 133; Section 5.2, Differentiated Instruction: English Learners, pp. 140, 142; Section 6.5, Differentiated Instruction: English Learners, p. 193; Section 7.1, Differentiated Instruction: English Learners, pp. 215, 222; Section 7.3, Differentiated Instruction: English Learners, p. 240; Section 8.1, Differentiated Instruction: English Learners, pp. 256, 261; Section 8.2, Differentiated Instruction: English Learners, pp. 271, 274; Section 9.3, Differentiated Instruction: English Learners, p. 302; Section 10.2, Differentiated Instruction: English Learners, p. 322; Section 10.3, Differentiated Instruction: English Learners, p. 326; Section 10.4, Differentiated Instruction: English Learners, p. 331; Section 12.2, Differentiated Instruction: English Learners, p. 396; Section 12.3, Differentiated Instruction: English Learners, p. 404; Section 13.1, Differentiated Instruction: English Learners, p. 423; Section 1.1, Differentiated Instruction: English Learners, pp. 449, 453; Section 14.2, Differentiated Instruction: English Learners, p. 462; Section 15.2, Differentiated Instruction: English Learners, p. 492; Section 16.1, Differentiated Instruction: English Learners, pp. 513, 520; Section 18.1, Differentiated Instruction: English Learners, p. 564; Section 18.4, Differentiated Instruction: English Learners, p. 592; Section 19.2, Differentiated Instruction: English Learners, p. 611; Section 19.3, Differentiated Instruction: English Learners, p. 616; Section 22.1, Differentiated Instruction: English Learners, p. 678; Section 23.4, Differentiated Instruction: English Learners, p. 735</p>
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ELD.K12.ELL.SI.1	English language learners communicate for social and instructional purposes within the school setting.	<p>SE: Strategies for English Language Learners, pp. xxii-xxvii</p> <p>TE: Strategies for English Language Learners, pp. xxii-xxvii;Section 2.3, Differentiated Instruction: English Learners, p. 59; Section 3.2, Differentiated Instruction: English Learners, p. 75;Section 5.1, Differentiated Instruction: English Learners, p. 133; Section 5.2, Differentiated Instruction: English Learners, pp. 140,142; Section 6.5, Differentiated Instruction: English Learners, p.193; Section 7.1, Differentiated Instruction: English Learners, pp. 215, 222; Section 7.3, Differentiated Instruction: English Learners, p. 240; Section 8.1, Differentiated Instruction: English Learners, pp. 256, 261; Section 8.2, Differentiated Instruction: EnglishLearners, pp. 271, 274; Section 9.3, Differentiated Instruction: English Learners, p. 302; Section 10.2, Differentiated Instruction: English Learners, p. 322; Section 10.3, Differentiated Instruction: English Learners, p. 326; Section 10.4, Differentiated Instruction: English Learners, p. 331; Section 12.2, Differentiated Instruction: English Learners, p. 396; Section 12.3, Differentiated Instruction: English Learners, p. 404; Section 13.1, Differentiated Instruction:English Learners, p. 423; Section 1.1, Differentiated Instruction: English Learners, pp. 449, 453; Section 14.2, Differentiated Instruction: English Learners, p. 462; Section 15.2, Differentiated Instruction: English Learners, p. 492; Section 16.1, Differentiated Instruction: English Learners, pp. 513, 520; Section 18.1, Differentiated Instruction: English Learners, p. 564; Section 18.4, Differentiated Instruction: English Learners, p. 592; Section 19.2, Differentiated Instruction: English Learners, p. 611; Section 19.3, Differentiated Instruction: English Learners, p. 616; Section 22.1, Differentiated Instruction: English Learners, p. 678; Section 23.4, Differentiated Instruction: English Learners, p. 735</p>
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