
9th Grade General Science

Curriculum Guide

Scranton School District

Scranton, PA



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Curriculum Guide

9th Grade General Science

Prerequisite:

- Completion of 8th grade physical science

9th Grade General Science is designed to be a survey course of the main branches of science offered at the high school level. Students will be introduced to basic concepts in Chemistry, Physics, Earth and Space Science, Biology, and Environmental Science. The course meets five class periods per week. The curriculum was developed as a foundation that students will build upon as they progress through high school.

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Year-at-a-glance

Subject: 9th Grade General Science	Grade Level: 9th	Date Completed: 7/16/15
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1st Quarter

Topic	Resources	Academic Standards
Scientific Approach: Measurements Scientific Data	Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 1: 1.3,1.4</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content	3.3.10.A8 CC.3.5 CC.3.6 3.1.10.A9 <u>Use for all Lessons</u> <ul style="list-style-type: none"> • Compare and contrast scientific theories. • Know that both direct and indirect observations are used by scientists to study the natural world and universe. • Identify questions and concepts that guide scientific investigations. • Formulate and revise explanations and models using logic and evidence. • Recognize and analyze alternative explanations and models. • Explain the importance of accuracy and precision in making valid measurements.

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<p>Chemistry Properties of Matter: Classifying Matter Physical Properties Chemical Properties</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 2: 2.1, 2.2</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.2.C.A1 CC.3.5 CC.3.6 3.1.C.C4: Use for all Chemistry Lessons</p> <ul style="list-style-type: none"> • Compare and contrast scientific theories. • Know that both direct and indirect observations are used by scientists to study the natural world and universe. • Identify questions and concepts that guide scientific investigations. • Formulate and revise explanations and models using logic and evidence. • Recognize and analyze alternative explanations and models. • Explain the importance of accuracy and precision in making valid measurements. • Examine the status of existing theories. • Evaluate experimental information for relevance and adherence to science processes. • Judge that conclusions are consistent and logical with experimental conditions. • Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution.
<p>States of Matter: Solids, Liquids, & Gases Phase Changes</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 3: 3.1,3.3</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.2.10.A3 3.2.C.A3 CC.3.5 CC.3.6</p>

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<p>Atomic Structure: History of Atoms Atomic Structure Atomic Theory</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space</u>: Chapter 4: 4.1, 4.2, 4.3 Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.2.C.A5 CC.3.5 CC.3.6</p>
<p>Periodic Table: Organization Modern Periodic Table Groupings</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space</u>: Chapter 5: 5.1, 5.2, 5.3 Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.2.C.A1 3.2.10.A1 CC.3.5 CC.3.6</p>
<p>Chemical Bonding: Ionic Bond Covalent</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space</u>: Chapter 6: 6.1, 6.2 Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.2.10.A2 CC.3.5 CC.3.6</p>

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Chemical Reactions: Types of Reactions	Approved textbook <u>Physical Science Concepts in Action with</u> <u>Earth and Space: Chapter 7: 7.2</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content	3.2.10.A4 3.2.C.A4 CC.3.5 CC.3.6
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2nd Quarter

Topic	Resources	Academic Standards
<p>Physics Motion: Distance and Displacement Speed and Velocity Acceleration</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 11: 11.1, 11.2, 11.3</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.2.P.B1 CC.3.5 CC.3.6 3.1.P.A9: <u>Use for all Lessons in Physics</u></p> <ul style="list-style-type: none"> • Compare and contrast scientific theories. • Know that both direct and indirect observations are used by scientists to study the natural world and universe. • Identify questions and concepts that guide scientific investigations. • Formulate and revise explanations and models using logic and evidence. • Recognize and analyze alternative explanations and models. • Explain the importance of accuracy and precision in making valid measurements. • Examine the status of existing theories. • Evaluate experimental information for relevance and adherence to science processes. • Judge that conclusions are consistent and logical with experimental conditions. • Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution. • Communicate and defend a scientific argument.

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Force and Motion: Forces Newton's Laws Momentum Universal Forces	Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 12: 12.1-12.4</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content	3.2.10.B1 CC.3.5 CC.3.6
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3rd Quarter

Topic	Resources	Academic Standards
Forms of Energy: Energy and it's forms Conversion and Conservation Energy Resources	Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 15: 15.1-15.3</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content	3.3.12.A2 3.2.P.B2 CC.3.5 CC.3.6

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<p><u>Earth Science</u> Earth's Structure: Plate Tectonics Earthquakes Volcanoes</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 22: 22.1, 22.4-22.6</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.3.10.A3 3.3.10.A1 CC.3.5 CC.3.6 3.3.10.A8: <u>Use for all Earth Science</u></p> <ul style="list-style-type: none"> • Compare and contrast scientific theories. • Know that both direct and indirect observations are used by scientists to study the natural world and universe. • Identify questions and concepts that guide scientific investigations. • Formulate and revise explanations and models using logic and evidence. • Recognize and analyze alternative explanations and models. • Explain the importance of accuracy and precision in making valid measurements.
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<p>Earth's History : Weathering and Mass Movement Water Shapes the Land Glaciers and Wind Oceans</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 23: 23.2-23.5</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.3.10.A5 CC.3.5 CC.3.6</p>
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4th Quarter

Topic	Resources	Academic Standards
Weather and Climate: The Atmosphere The Sun/Seasons Solar Energy Water Atmosphere Weather/Climate	Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 24: 24.1-24.6</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content	3.3.10.A6 3.3.12.A6 3.3.12.A8 3.3.10.A4 CC.3.5 CC.3.6

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<p>The Solar System: Exploring the solar system Earth Moon System Planets Origin</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space</u>: Chapter 25: 25.1-25.5 Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.3.10.B1 3.3.12.B3 CC.3.5 CC.3.6 3.3.10.B3 <u>Use for Solar System Lessons</u></p> <ul style="list-style-type: none"> • Compare and contrast scientific theories. • Know that both direct and indirect observations are used by scientists to study the natural world and universe. • Identify questions and concepts that guide scientific investigations. • Formulate and revise explanations and models using logic and evidence. • Recognize and analyze alternative explanations and models. • Explain the importance of accuracy and precision in making valid measurements.
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<p>Exploring the Universe: The Sun/Stars Life Cycle of Stars Groups of Stars Expanding Universe</p>	<p>Approved textbook <u>Physical Science Concepts in Action with Earth and Space: Chapter 26: 26.1-26.5</u> Lesson/Unit Plan Instructional Content Educational Resources Assessment Videos Web-Based Content</p>	<p>3.3.12.B1 3.3.12.B3 CC.3.5 CC.3.6 3.3.12.B3 <u>Use for Universe Lessons</u></p> <ul style="list-style-type: none"> • Examine the status of existing theories. • Evaluate experimental information for relevance and adherence to science processes. • Judge that conclusions are consistent and logical with experimental conditions. • Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution. • Communicate and defend a scientific argument.
<p>Review and Final Examination</p>		

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<p>States of Matter:</p> <ul style="list-style-type: none"> • Solids, Liquids, & Gases • Phase Changes 	<p>3.2.10.A3</p> <p>3.2.C.A3</p> <p>CC.3.5</p> <p>CC.3.6</p>	<p>Describe phases of matter according to the kinetic molecular theory.</p> <p>Describe the three normal states of matter in terms of energy, particle motion, and phase transitions.</p> <p>Reading Informational Text</p> <p>Writing</p>	<p>Approved textbook</p> <p>Worksheets</p> <p>Activity Assessments</p> <p>Smart Boards</p> <p>Multimedia Presentations</p> <p>Webquest</p>	<p>Teacher prepared tests, quizzes, etc.</p> <p>Series available assessments online. (Optional)</p>	<p>4 days</p>
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Periodic Table: <ul style="list-style-type: none"> • Organization • Modern Periodic Table • Groupings 	3.2.C.A1	Explain the relationship of an element’s position on the periodic table to its atomic number, ionization energy, electro-negativity, atomic size, and classification of elements.	Approved textbook	Teacher prepared tests, quizzes, etc.	6 days
	3.2.10.A1	Predict properties of elements using trends of the periodic table.	Worksheets	Series available assessments online. (Optional)	
	CC.3.5	Reading Informational Text	Activity Assessments	Smart Boards	
	CC.3.6	Writing	Multimedia Presentations	Webquest	

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<p>Earth's History</p> <ul style="list-style-type: none"> • Weathering and Mass Movement • Water Shapes the Land • Glaciers and Wind • Oceans 	<p>3.3.10.A5</p>	<p>Explain how there is only one ocean.</p> <p>Explain the processes of the hydrologic cycle.</p> <p>Explain the dynamics of oceanic currents and their relationship to global circulation within the marine environment.</p>	<p>Approved textbook</p> <p>Worksheets</p> <p>Activity Assessments</p> <p>Smart Boards</p> <p>Multimedia Presentation</p>	<p>Teacher prepared tests, quizzes, etc.</p> <p>Series available assessments online. (Optional)</p>	<p>20 days</p>
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	3.3.12.A8	Relate the transfer of energy through radiation, conduction, and convection to global atmospheric processes.			
		Relate geochemical cycles to conservation of matter.			
	3.3.10.A4	Explain how the Earth's systems and its various cycles are driven by energy.			
	CC.3.5	Reading Informational Text			
	CC.3.6	Writing			

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Review and Final Examination					10 days
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