
8th Grade Physical Science

Curriculum Guide

Scranton School District

Scranton, PA



8th Grade Physical Science

Prerequisite:

- Successful completion of 7th Grade Life Science

Physical Science is the study of matter, energy, and changes they undergo. The course includes both Chemistry and Physics topics.

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Year-at-a-glance

Subject: 8 th Grade Physical Science	Grade Level: 8 th	Date Completed: 8/4/2015
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1st Quarter

Topic	Resources	Assessment Anchor
Scientific Inquiry	Approved textbook	AA.S8.A.1.1. AA.S8.A.2.1.
Describing Matter	Approved textbook	AA.S8.C.1.1. AA.S8.A.3.2. AA.S8.A.3.3.
Measuring Matter	Approved textbook	AA.S8.C.1.1. AA.S8.A.1.3. AA.S8.A.2.2.
Physical and Chemical Changes of Matter	Approved textbook	AA.S8.C.1.1. AA.S8.A.1.3.

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2nd Quarter

Topic	Resources	Assessment Anchor
Physical and Chemical Changes of Matter (continued)	Approved textbook	AA.S8.C.1.1. AA.S8.A.1.3.
Phase Changes	Approved textbook	AA.S8.C.2.1. AA.S8.A.3.3.
Energy Sources, Forms, And Types	Approved textbook	AA.S8.C.2.1. AA.S8.C.2.2. AA.S8.A.1.2.

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3rd Quarter

Topic	Resources	Assessment Anchor
Energy Transformations	Approved textbook	AA.S8.C.2.1. AA.S8.A.3.1.
Motion	Approved textbook	AA.S8.C.3.1.
Forces	Approved textbook	AA.S8.C.3.1.
Mechanical Advantage of Simple Machines	Approved textbook	AA.S8.C.3.1. AA.S8.A.1.2. AA.S8.A.1.3. AA.S8.A.3.1.

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4th Quarter

Topic	Resources	Assessment Anchor
Electricity	Approved textbook	AA.S6.C.3.2. AA.S8.A.3.1.
Magnetism and Electromagnetism	Approved textbook	AA.S6.A.3.2.
Optional Content	Approved textbook	Varies based on content

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General Topic	Academic Standard(s)	Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time
<p>Scientific Practices</p>	<p>AA.S8.A.1.1. AA.S8.A.1.3. AA.S8.A.2.1. AA.S8.A.2.2.</p> <p>EC.S8.A.1.1.3. EC.S8.A.1.1.4. EC.S8.A.2.1.1. EC.S8.A.1.3.2. EC.S8.A.2.2.2. EC.S8.A.2.1.5. EC.S8.A.2.1.4.</p> <p>CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.G CC.3.5.6-8.I CC.3.6.6-8.A</p>	<p>Use evidence, such as observations or experimental results, to support inferences about a relationship.</p> <p>Develop descriptions, explanations, predictions, and models using evidence.</p> <p>Use evidence, observation, or a variety of scales to describe relationships.</p> <p>Use evidence to make inferences about change in systems over time.</p> <p>Use measurements to record and interpret observations.</p> <p>Use evidence from investigations to clearly communicate conclusions.</p> <p>Interpret data, evidence, or observations to develop relationships, and design models as solutions.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>Periodically throughout the year, when applicable</p>

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<p>Scientific Inquiry</p>	<p>AA.S8.A.1.1. AA.S8.A.2.1. EC.S8.A.1.1.1. EC.S8.A.1.1.2. EC.S8.A.2.1.2. EC.S8.A.2.1.3. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.G CC.3.5.6-8.H</p>	<p>Distinguish between scientific theory and opinion, explaining how a scientific theory can change. Explain how certain questions can be answered through scientific inquiry. Use relationships and operational concepts to develop testable questions and formulate hypotheses. Design a controlled experiment identifying the independent variable, dependent variable, and the control.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>15 Days</p>
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<p>Optional Content: Impact of Science and Technology*</p> <p><i>* Covered together as one unit or separately throughout many units.</i></p>	<p>AA.S8.A.1.2. AA.S8.A.3.1. AA.S8.A.3.2.</p> <p>EC.S8.A.1.2.1. EC.S8.A.1.2.3. EC.S8.A.3.1.1. EC.S8.A.3.1.3. EC.S8.A.3.2.2. EC.S8.A.2.1.6.</p> <p>CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H</p>	<p>Describe positive and negative effects of scientific results or developments.</p> <p>Describe technological concepts that could solve practical problems.</p> <p>Describe a system as a group of related parts working together.</p> <p>Distinguish among system, inputs, outputs, processes, and feedback.</p> <p>Describe how models are used to improve technologies.</p> <p>Identify a design flaw in a technological system and devise possible solutions.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>5 Days</p>
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<p>Describing Matter</p>	<p>AA.S8.C.1.1. AA.S8.A.3.2. AA.S8.A.3.3.</p> <p>EC.S7.C.1.1.2. EC.S8.A.3.2.1. EC.S8.C.1.1.1. EC.S8.A.3.3.2.</p> <p>CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H</p>	<p>Recognize that the atom is the basic building block for all matter.</p> <p>How scientists use models to describe the natural world.</p> <p>Explain the differences among elements, compounds, and mixtures.</p> <p>Describe repeating structural patterns in nature.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>15 Days</p>
<p>Measuring Matter</p>	<p>AA.S8.C.1.1. AA.S8.A.1.3. AA.S8.A.2.2.</p> <p>EC.S6.C.1.1.2. EC.S7.C.1.1.4. EC.S8.A.1.3.1. EC.S8.A.2.2.1. EC.S8.A.2.2.3.</p> <p>CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H</p>	<p>Explain materials are characterized by having a specific amount of mass in each volume (density).</p> <p>Describe the relationship between mass and volume as density.</p> <p>Use ratios to describe change.</p> <p>Describe use of tools to accurately and safely measure matter.</p> <p>Describe ways technology</p>	<p>Approved Textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>15 Days</p>

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<p>Physical and Chemical Changes of Matter</p>	<p>AA.S8.C.1.1. AA.S8.A.1.3. EC.S8.C.1.1.3. EC.S7.C.1.2.1. EC.S8.A.1.3.2. EC.S8.A.1.3.3. EC.S6.C.1.2.2. EC.S6.C.1.2.2. EC.S6.C.1.1.1. EC.S8.C.1.1.2. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.D</p>	<p>Identify and describe reactants and products of simple chemical reactions. Use evidence to describe how a system changes over time, and describe variables that might cause the change. Identify differences between chemical and physical changes in matter. Identify differences between chemical and physical changes in matter. Describe and use characteristic physical or chemical properties to distinguish one substance from another.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>20 Days</p>
<p>Optional Content: Acid – Base Reactions</p>	<p>AA.S8.C.1.1.</p>	<p>Explain concepts about the structure and properties of matter.</p>	<p>Approved Textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>10 Days</p>

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<p>Phase Changes</p>	<p>AA.S8.C.2.1. AA.S8.A.3.3. EC.S6.C.2.1.1. EC.S8.A.3.3.2. EC.S8.C.2.1.2. EC.S6.C.2.1.2. EC.S6.C.1.2.1. EC.S7.C.1.2.2. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.G</p>	<p>Describe how heat moves in predictable ways from warmer objects to cooler ones until they reach the same temperature.</p> <p>Describe repeating structural patterns in nature.</p> <p>Explain how energy is transferred from one place to another through convection, conduction, and radiation.</p> <p>Describe the effect on heat on particle motion during phase changes.</p> <p>Describe how water changes from one state to another.</p> <p>Compare the behavior of particle motion in solids, liquids, and gases.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>15 Days</p>
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<p>Energy Sources, Forms, and Types</p>	<p>AA.S8.C.2.1. AA.S8.C.2.2. AA.S8.A.1.2.</p> <p>EC.S8.C.3.1.2. EC.S8.C.2.1.1. EC.S6.C.2.1.3. EC.S8.C.2.2.1. EC.S8.C.2.2.2. EC.S8.C.2.2.3. EC.S8.A.1.2.1.</p> <p>CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H</p>	<p>Distinguish between kinetic and potential energy.</p> <p>Distinguish among forms of energy and sources of energy.</p> <p>Compare various energy sources and describe how these energy sources are transferred.</p> <p>Describe the Sun as the major source of energy that impacts the environment.</p> <p>Compare the time span of renewability for fossil fuels and alternative fuels.</p> <p>Describe the waste derived from the use of renewable and nonrenewable resources and their potential impact on the environment.</p> <p>Describe positive and negative effects of scientific results or developments.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>10 Days</p>
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Energy Transformations	AA.S8.C.2.1. AA.S8.A.3.1. EC.S8.C.2.1.3. EC.S8.A.3.1.4. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H	Describe how one form of energy can be converted into a different form of energy. Distinguish between open loop and close loop systems.	Approved textbook	Teacher prepared tests, quizzes, etc.	10 Days
Motion	AA.S8.C.3.1. EC.S6.C.3.1.1. EC.S7.C.3.1.2. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.D CC.3.5.6-8.G	Compare speed and velocity. Describe how unbalanced forces acting on an object change its velocity.	Approved Textbook	Teacher prepared tests, quizzes, etc.	10 Days

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Forces	AA.S8.C.3.1. EC.S8.C.3.1.1. EC.S6.C.3.1.2. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.D	Describe forces acting on objects. Explain why gravitational force depends on how much mass the objects have and the distance between them.	Approved textbook	Teacher prepared tests, quizzes, etc.	15 Days
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<p>Mechanical Advantage of Simple Machines</p>	<p>AA.S8.C.3.1. AA.S8.A.1.2. AA.S8.A.1.3. AA.S8.A.3.1.</p> <p>EC.S8.C.3.1.3. EC.S7.C.3.1.3. EC.S8.A.1.2.3. EC.S8.A.1.3.1. EC.S8.A.3.1.1. EC.S8.A.3.1.3.</p> <p>CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H</p>	<p>Explain the mechanical advantage helps do work by either changing a force or changing the direction of the applied force.</p> <p>Explain the mechanical advantage of simple machines.</p> <p>Describe technological concepts that could solve practical problems.</p> <p>Use ratios to describe change.</p> <p>Describe a system as a group of related parts working together.</p> <p>Distinguish among system, inputs, outputs, processes, and feedback.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>10 Days</p>
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<p>Electricity</p>	<p>AA.S6.C.3.2. AA.S8.A.3.1. EC.S6.C.3.2.2. EC.S8.A.3.1.4. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.D</p>	<p>Describe the relationship between voltage, current, and resistances (Ohm's Law). Distinguish between open loop and close loop systems.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>10 Days</p>
<p>Magnetism and Electromagnetism</p>	<p>AA.S6.C.3.2. EC.S6.C.3.2.1. EC.S6.C.3.2.3. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H</p>	<p>Describe how magnets and electricity produce related forces. Describe how electricity produces magnetic forces and vice versa. Distinguish between gravity and electromagnetism.</p>	<p>Approved textbook</p>	<p>Teacher prepared tests, quizzes, etc.</p>	<p>10 Days</p>

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Optional Content: Waves	AA.S8.A.3.3. EC.S8.A.3.3.2. CC.3.5.6-8.A-C CC.3.5.6-8.J CC.3.6.6-8.C CC.3.6.6-8.H CC.3.5.6-8.D	Describe repeating structural patterns in nature.	Approved textbook	Teacher prepared tests, quizzes, etc.	10 Days
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