

North East School District PA Core Curriculum Map

Science

Fifth Grade



INTRODUCTION

The performance expectations in fifth grade help students formulate answers to questions such as: “When matter changes, does its weight change? How much water can be found in different places on Earth? Can new substances be created by combining other substances? How does matter cycle through ecosystems?”


Students develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students determine whether the mixing of two or more substances results in new substances. Through the development of a model using an example, students are able to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. They describe and graph data to provide evidence about the distribution of water on Earth. Students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water.

The crosscutting concepts of patterns; cause and effect; scale, proportion, and quantity; energy and matter; and systems and systems models are called out as organizing concepts for these disciplinary core ideas.

In the fifth-grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information; and to use these practices to demonstrate understanding of the core ideas

This document describes what students should know and be able to do in the following eight areas:

- ◇ 3.1. Biological Sciences
- ◇ 3.2. Physical Sciences: Chemistry and Physics
- ◇ 3.3. Earth and Space Sciences
- ◇ 3.4. Technology and Engineering Education

<p><u>SCIENCE</u></p>	<p><u>Science 5</u></p>	<p><u>GRADE 5</u></p>
	<p>5th Grade Science encompasses a wide variety of concepts, vocabulary, and skills which engage students with hands-on science labs and activities. During each unit, students practice and apply science processing skills with a particular emphasis on making observations, communicating data and results, comparing and organizing, discovering relationships, and designing controlled experiments.</p> <p>There are four [4] major units of study covered throughout the year. The course begins and ends with the Scientific Method. Students will begin the year working together to formulate experiments while understanding each step of the scientific process. By the end of the year, students will have the opportunity to independently exercise their knowledge by preparing a project to showcase in the annual Science Fair.</p> <p>In the fall, we dive into Ecosystems, focusing on the Great Lakes, aquatic life, forests, and our role as responsible inhabitants of the planet. Mid-year comes an introduction to Physical Science and Chemistry along with an emphasis on Matter and Energy, where the students will have the opportunity to experiment with mixtures and reaction, determine the difference between physical and chemical reactions, and become familiar with the periodic table of elements. We end the year revisiting the Scientific Method and measurement, along with hands-on STEM activities in order to demonstrate their understanding of the skills and concepts learned throughout the school year.</p> <p><u>PA CORE Reporting Categories & Assessment Anchors</u></p> <p><u>The Nature of Science</u> S.5.A.1 → Reasoning and Analysis. S.5.A.2 → Processes, Procedures, and Tools of Scientific Investigations.</p>	

	<p>S.5.A.3 → Systems, Models, and Patterns. <u>Biological Sciences</u> S.5.B.1 → Structure and Function of Organisms. S.5.B.2 → Continuity of Life. S.5.B.3 → Ecological Behavior and Systems.</p> <p><u>Physical Sciences</u> S.5.C.1 → Structure, Properties, and Interaction of Matter and Energy. S.5.C.2 → Forms, Sources, Conversion, and Transfer of Energy. S.5.C.3 → Principles of Motion and Force.</p> <p><u>Earth and Space Sciences</u> S.5.D.1 → Earth Features and Processes That Change Earth and Its Resources. S.5.D.2 → Weather, Climate, and Atmospheric Processes. S.5.D.3 → Composition and Structure of the Universe.</p>			
MONTH/QUARTER	CONCEPTS	STANDARDS/ ELIGIBLE CONTENT	ASSESSMENTS	RESOURCES
<p>SEPTEMBER</p>	<p>Scientific Method</p> <p>Recognize the importance of Scientific Inquiry</p> <p>Designing a controlled experiment</p>	<p><u>Nature of Science</u> <i>Reasoning And Analysis</i></p> <p>S.5.A.1.1.1 Explain how certain questions can be answered through scientific inquiry and/or technological design.</p> <p>S.5.A.1.1.2</p>	<p>Lab Sheets</p> <p>Paper-Pencil Assessments</p> <p>Observation</p> <p>Science Project [In-Class Presentation]</p> <p>Observation Rubric</p>	<p>Science Experiment Books</p> <p>Scholastic Super Science Magazine</p> <p>Versatiles Book/Tiles</p> <p>Colored Markers</p> <p>Filter Paper</p>

		<p>Explain how observations and/or experimental results are used to support inferences and claims about an investigation or relationship.</p> <p>S.5.A.1.1.3 Describe how explanations, predictions, and models are developed using evidence.</p> <p><i>Processes, Procedures, And Tools Of Scientific Investigations</i></p> <p>S.5.A.2.1.1 Design a simple, controlled experiment (fair test) identifying the independent and dependent variables, how the dependent variable will be measured, and which variables will be held constant.</p> <p>S.5.A.2.1.2 Describe relationships</p>	<p>Bubble Test</p> <p>Text Dependent Writing</p>	<p>Jars</p> <p>Seeds</p> <p>Ziplock Bags</p>
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		between variables through interpretation of data and observations.		
MONTH/QUARTER	CONCEPTS	STANDARDS/ ELIGIBLE CONTENT	ASSESSMENTS	RESOURCES
OCTOBER	The Great Lakes Environment & Ecosystem Continuity of Life	<p><u>Nature Of Science</u> <i>Systems, Models, And Patterns</i></p> <p>S.5.A.3.1.1 Make predictions based on patterns in natural systems.</p> <p>S.5.A.3.2.1 Describe how models are used to better understand the relationships in natural systems.</p> <p><u>Earth And Space Sciences</u> <i>Weather, Climate, And Atmospheric Pressure</i></p> <p>S.5.D.2.1.2</p>	Essay On Weather Cycle Of The Great Lakes Region [How Does The Weather Affect Farms, Agriculture, And Growth Production] Observation Questioning Lab Sheets Versatiles	Great Lakes Almanac Weather Patterns Internet Resources Teacher-Made Material - Great Lakes Workshops

		<p>Explain the effects of oceans and lakes on climate.</p> <p><i>Earth Features And Processes That Change Earth And Its Resources</i></p> <p>S.5.D.1.1.1 Differentiate between abrupt changes in Earth’s surface.</p> <p>S.5.D.1.1.2 Explain how geological processes observed today are similar to those in the past.</p> <p>S.5.D.1.2.1 Identify physical, chemical, and biological factors that affect water quality.</p> <p>S.5.D.1.2.2 Describe the importance of wetlands in an ecosystem.</p>		
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		<p><u>Nature Of Science</u> <i>Systems, Models, And Patterns</i></p> <p>S.5.A.3.2.1 Describe how models are used to better understand the relationships in natural systems. [Ecosystem]</p> <p><u>Biological Sciences</u> <i>Continuity of Life</i></p> <p>S.5.B.2.1.1 Differentiate between inherited and acquired traits.</p>		
NOVEMBER	<p>The Great Lakes Environment and Ecosystem</p> <p>Continuity of Life</p> <p>[continued from October...]</p>	<p><u>Biological Sciences</u> <i>Continuity of Life</i></p> <p>S.5.B.2.1.2 Explain how inherited traits help organisms survive and reproduce in different environments.</p>	<p>Observation</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p> <p>Lab Sheets</p> <p>Versatiles</p>	<p>Earth Force Materials</p> <p>Great Lakes Websites</p> <p>Various Fish</p> <p>Materials From Quality Deer Management</p>

		<p>S.5.B.2.1.3 Explain how certain behaviors help organisms survive and reproduce in different environments.</p> <p>S.5.B.2.1.4 Identify changes in environmental conditions that can affect the survival of populations and entire species.</p>		<p>Association Materials From PA Fish/Game Commission</p> <p>Materials Obtained Through PA Wildlife Leadership</p>
MONTH/QUARTER	CONCEPTS	STANDARDS/ ELIGIBLE CONTENT	ASSESSMENTS	RESOURCES
DECEMBER	<p>Forest Environment and Ecosystems [White Tailed Deer]</p> <p>Text Dependent Reading and Analysis - Cross Curricular Support</p>	<p>Biological Sciences <i>Ecological Behavior And Systems</i></p> <p>S.5.B.3.1.1 Describe the roles of producers, consumers, and decomposers within a local ecosystem.</p> <p>S.5.B.3.1.2 Describe the relationships between organisms in</p>	<p>Observation</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p> <p>Bubble Test And Essay</p> <p>Lab Sheets</p> <p>Versatiles</p>	<p>Teacher Provided Materials [Deer Parts]</p> <p>Scholastic Super Science Magazine</p>

		<p>different food webs.</p> <p>S.5.B.3.2.1 Identify fossil fuels and alternative fuels used by humans.</p> <p>S.5.B.3.2.2 Describe the usefulness of Earth’s physical resources as raw materials for the human-made world.</p> <p>S.5.B.3.2.3 Explain how different items are recycled and reused.</p>		
JANUARY	Measurement	<p><u>Nature Of Science</u> <i>Processes, Procedures, And Tools Of Scientific Investigations</i></p> <p>S.5.A.2.2.1 Describe the appropriate use of instruments and scales to accurately measure time, mass, distance, volume, and temperature safely under</p>	<p>Performance Assessment</p> <p>Observation</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p>	<p>Balance</p> <p>Scales</p> <p>Graduated Cylinders</p> <p>Measuring Cups/Spoon</p> <p>Thermometers</p>

		<p>a variety of conditions.</p> <p>S.5.A.2.2.2 Explain how technology extends and enhances human abilities for specific purposes.</p> <p>Physical Sciences <i>Structure, Properties, And Interaction Of Matter And Energy</i></p> <p>S.5.C.1.1.1 Identify characteristic properties of matter that are independent of mass and volume.</p> <p>S.5.C.1.1.2 Differentiate between volume and mass.</p>		
MONTH/QUARTER	CONCEPTS	STANDARDS/ ELIGIBLE CONTENT	ASSESSMENTS	RESOURCES
FEBRUARY	Matter and Energy	Physical Sciences <i>Structure, Properties, And Interaction Of</i>	Performance Assessment Observation	Glue Corn Starch

	<p><i>Text Dependent Reading and Analysis - Cross Curricular Support</i></p>	<p><i>Matter And Energy</i></p> <p>S.5.C.1.1.1 Identify characteristic properties of matter that are independent of mass and volume.</p> <p>S.5.C.1.1.2 Differentiate between volume and mass.</p> <p>S.5.C.1.2.1 Describe how water changes from one state to another.</p> <p>S.5.C.1.2.2 Identify differences between chemical and physical changes of matter.</p> <p><i>Forms, Sources, Conversion, And Transfer Of Energy</i></p> <p>S.5.C.2.1.1</p>	<p>Lab Sheets</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p>	<p>Borax</p> <p>Plastic Bags</p> <p>Food Coloring</p> <p>Various Solutions From The HS Chemistry Lab</p> <p>Magnets</p> <p>D-Cells</p> <p>Wires</p> <p>Bulbs</p> <p>Sand Paper</p> <p>Ramps</p> <p>Wheeled & Unwheeled Objects</p>
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		<p>Describe how energy exists in many forms and can be transformed within a system.</p> <p>S.5.C.2.1.2 Describe how heat energy is usually a byproduct of an energy transformation.</p> <p><i>Principles Of Motion And Force</i></p> <p>S.5.C.3.2 Observe and recognize how magnets and electricity produce related forces.</p> <p>S.5.C.3.2.1 Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces.</p>		
<p>MARCH</p>	<p>Matter and Energy [continued...]</p>	<p>Earth And Space Sciences <i>Composition And</i></p>	<p>Performance Assessment Observation</p>	<p>Previously Referenced Resources</p>

	Solar System	<p><i>Structure Of The Universe</i></p> <p>S.5.D.3.1 Explain the relationships between objects in our solar system.</p> <p>S.5.D.3.1.1 Describe the patterns of Earth’s rotation and revolution in relation to the Sun and Moon [i.e., solar eclipse, phases of the Moon, and time].</p> <p>S.5.D.3.1.2 Compare the general characteristics of the inner planets of our solar system [i.e., size, orbital path, surface characteristics, and moons].</p>	<p>Lab Sheets</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p>	Solar System Artifacts
MONTH/QUARTER	CONCEPTS	STANDARDS/ ELIGIBLE CONTENT	ASSESSMENTS	RESOURCES
APRIL	Composting, Soil, Seeds, and Plants	<p><u>Earth And Space Sciences</u></p> <p><i>Earth Features And</i></p>	<p>Performance Assessment</p> <p>Observation</p>	<p>Internet Resources</p> <p>Decomposable</p>

		<p><i>Processes That Change Earth And Its Resources</i></p> <p>S.5.D.1.1.1 Differentiate between abrupt changes in Earth’s surface.</p> <p>S.5.D.1.1.2 Explain how geological processes observed today are similar to those in the past.</p> <p><u>Nature Of Science</u> <i>Systems, Models, And Patterns</i></p> <p>S.5.A.3.1.1 Make predictions based on patterns in natural systems.</p> <p>S.5.A.3.2.1 Describe how models are used to better understand the relationships in natural systems.</p>	<p>Lab Sheets</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p> <p>Versatiles</p>	<p>Materials</p> <p>Soil</p> <p>Paper Towels</p> <p>Ziplock Bags</p>
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		<p><u>Biological Sciences</u> <i>Continuity Of Life</i></p> <p>S.5.B.2.1.3 Explain how certain behaviors help organisms survive and reproduce in different environments.</p> <p>S.5.B.2.1.4 Identify changes in environmental conditions that can affect the survival of populations and entire species.</p> <p><u>Biological Sciences</u> <i>Ecological Behavior And Systems</i></p> <p>S.5.B.3.1.1 Describe the roles of producers, consumers, and decomposers within a local ecosystem.</p> <p>S.5.B.3.1.2</p>		
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		<p>Describe the relationships between organisms in different food webs.</p> <p>S.5.B.3.2.2 Describe the usefulness of Earth’s physical resources as raw materials for the human-made world.</p> <p>S.5.B.3.2.3 Explain how different items are recycled and reused.</p>		
MAY	<p>Composting, Soil, Seeds, and Plants [continued...]</p> <p>Force and Motion</p> <p>Matter and Energy</p>	<p><u>Earth And Space Sciences</u> <i>Earth Features And Processes That Change Earth And Its Resources</i></p> <p>S.5.D.1.1.1 Differentiate between abrupt changes in Earth’s surface.</p> <p>S.5.D.1.1.2 Explain how geological processes observed today are similar to those in the</p>	<p>Performance Assessment</p> <p>Observation</p> <p>Lab Sheets</p> <p>Questioning</p> <p>Paper-Pencil Assessments</p> <p>Versatiles</p>	<p>Internet Resources</p> <p>Decomposable Materials</p> <p>Soil</p> <p>Paper Towels</p> <p>Ziplock Bags</p>

		<p>past.</p> <p><u>Nature Of Science</u> <i>Systems, Models, And Patterns</i></p> <p>S.5.A.3.1.1 Make predictions based on patterns in natural systems.</p> <p>S.5.A.3.2.1 Describe how models are used to better understand the relationships in natural systems.</p> <p><u>Biological Sciences</u> <i>Continuity Of Life</i></p> <p>S.5.B.2.1.3 Explain how certain behaviors help organisms survive and reproduce in different environments.</p> <p>S.5.B.2.1.4</p>		
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		<p>Identify changes in environmental conditions that can affect the survival of populations and entire species.</p> <p>Biological Sciences <i>Ecological Behavior And Systems</i></p> <p>S.5.B.3.1.1 Describe the roles of producers, consumers, and decomposers within a local ecosystem.</p> <p>S.5.B.3.1.2 Describe the relationships between organisms in different food webs.</p> <p>S.5.B.3.2.2 Describe the usefulness of Earth’s physical resources as raw materials for the human-made world.</p> <p>S.5.B.3.2.3 Explain how different items are recycled and</p>		
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MONTH/QUARTER	CONCEPTS	STANDARDS/ ELIGIBLE CONTENT	ASSESSMENTS	RESOURCES
JUNE	Comprehensive and Cumulative Review	<p>reused.</p> <p>Physical Sciences <i>Principles Of Motion And Force</i></p> <p>S.5.C.3.1 Explain the relationships between mass, force, and movement.</p>	Assessment Packet	Waldameer Park Rides and Resources