

---

# Science 7

Curriculum Guide

Dunmore School District

Dunmore, PA



**Dunmore School District  
Curriculum Guide**

**Science 7**

**Prerequisite:**

- Successful completion Sixth Grade Science

**Course Description:**

The Science 7 (Earth and Space Science) course is the study of space, geologic structures and forces, the waters on our planet, and the atmospheric forces that shape our world. Students will explore the Earth's spheres including the geosphere, hydrosphere, atmosphere, and the cycles of the Earth such as the water and carbon cycle. Students will learn about scientific inquiry, geologic time, space exploration, the solar system, and the universe. This course allows students connect with geological history, the amazing landforms around the globe, the nature of the sea and air, and the newest discoveries about our universe, it gives students an opportunity to relate to their everyday world.

**Special Education:**

After a student has been evaluated and found to be eligible for specially designed instruction under one of the 13 disability categories, an individualized education plan will be developed to help the student succeed through a more intense intervention program. Special Education is the practice of educating students in a way that addresses their individual differences and needs. The purpose of special education is to provide equal access to education for children ages birth through 21 by providing specialized services that will lead to school success in general education. Our goal for each student is for him/her to be educated in his/her least restrictive environment with additional supports by way of specially designed instruction. After all interventions in the general education setting have been exhausted and the student is still not making progress, students can receive direct instruction in a special education classroom. Direct instruction provides more intense intervention and replacement instruction in order to minimize skill deficits. In our special education classrooms, students will have access to the standards-based general education curriculum, as well as using various research-based intervention programs. Resources and activities will be adjusted based on individual student needs. Suggested time found within the curriculum will be adjusted as needed per individual student's needs.

Special Education Strategies can be located in the IEP Enhancements table located in Appendix: A at the end of this document.

**Dunmore School District  
Curriculum Guide**

Year-at-a-glance

<b>Subject: Science 7</b>	<b>Grade Level: 7</b>	<b>Date Completed: 4/8/2019</b>
---------------------------	-----------------------	---------------------------------

**1<sup>st</sup> Quarter**

<b>Topic</b>	<b>Resources</b>	<b>Standards</b>
<b>Earth as a System</b>	Teacher made documents Teacher prepared labs Lab on carbon sequestration Show movie Tapped with worksheet	3.5.7.A, 3.5.7.C, 3.5.7.D, 3.1.7.A, 3.1.7.B, 3.1.7.E, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.1.7.D
<b>Resources and the Environment</b>	Teacher made documents Teacher prepared labs Lab on alternative energies	3.1.7.A, 3.1.7.D, 3.1.7.E, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.5.7.A, 3.5.7.B
<b>Earth History</b>	Teacher made documents Teacher prepared labs Lab on Minerals Acid testing for calcite Lab Lab Identify the missing rock layer Video PBS NOVA Origins of North America with worksheet Lab Grand Canyon Stream Table Video on Weathering and Erosion with worksheet Seawater/Limestone lab Adding tape timelines for the Earth PBS timelines website Lab on Salol Crystals and crystal size Lab Convection in fluids Lab on Plate Tectonics	3.5.7.B, 3.1.7.A, 3.1.7.D, 3.1.7.E, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.5.7.A, 3.4.7.B, 3.4.7.D

**Dunmore School District  
Curriculum Guide**

**2<sup>nd</sup> Quarter**

Topic	Resources	Standards
Earth History Continued	See Quarter 1	3.5.7.B, 3.1.7.A, 3.1.7.D, 3.1.7.E, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.5.7.A, 3.4.7.B, 3.4.7.D

**Dunmore School District  
Curriculum Guide**

**3<sup>rd</sup> Quarter**

Topic	Resources	Standards
<b>Weather and Water</b>	Teacher made documents Teacher prepared labs Lab Gas in a syringe Lab balloon balance Lab Air Pressure pressure in a jar Video Natgeo Bill Nye Global Meltdown with worksheet Lab on Radiation and Energy Transfer Sun and Seasons animated graphic Direct Solar Energy demonstration Lab Conduction Aluminum and Steel in hot water Lab Density layering salt solutions Lab Density of hot and cold water Lab Convection Chamber gas Lab on relative humidity Lab on condensation and dew point Lab making a Cloud in a bottle Lab on Oceans	3.1.7.A, 3.1.7.B, 3.1.7.C, 3.1.7.D, 3.1.7.E, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.4.4.D, 3.4.7.D, 3.5.7.C, 3.5.7.D

**Dunmore School District  
Curriculum Guide**

**4<sup>th</sup> Quarter**

<b>Topic</b>	<b>Resources</b>	<b>Standards</b>
<b>Weather and Water Continued</b>	See Quarter 3	3.1.7.A, 3.1.7.B, 3.1.7.C, 3.1.7.D, 3.1.7.E, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.4.4.D, 3.4.7.D, 3.5.7.C, 3.5.7.D
<b>Origins the Sun, the Solar System, and our Moon</b>	Teacher made documents Teacher prepared labs Lab on Relativity and Gravity Lab on stars and outer solar system Video on the Sun with worksheet Activities and demonstrations with telescope Activity with the phases of the Moon Video on the Moon with worksheet	3.1.7.A, 3.1.7.B, 3.1.7.C, 3.1.7.D, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.4.4.D, 3.4.7.D
<b>The Planets, Solar System, and Life Cycle of Stars</b>	Teacher made documents Teacher prepared labs Lab on spectroscopy Lab on Planets	3.1.7.A, 3.1.7.B, 3.1.7.C, 3.1.7.D, 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D, 3.4.4.D, 3.4.7.D
<b>Review and Final Exam</b>		

**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
	PA Academic and Core Standards				
<b>Earth as a System</b>  <b>What is Earth system science?</b>  <b>What are the Earth system's four spheres, and how do they affect one another?</b>  <b>What are cycles and how do they work?</b>  <b>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</b>	<b>Anchor Descriptor:</b> S8.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).  S8.A.1.2 Identify and explain the impacts of applying scientific, environmental, or technological knowledge to address solutions to practical problems.  S8.A.1.3 Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.  S8.A.2.1 Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.  S8.A.2.2 Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.	<b>Eligible Content:</b> .1.1.1 Distinguish between a scientific theory and an opinion, explaining how a theory is supported with evidence, or how new data/information may change existing theories and practices.  S8.A.1.1.2 Explain how certain questions can be answered through scientific inquiry and/or technological design.  S8.A.1.1.3 Use evidence, such as observations or experimental results, to support inferences about a relationship.  S8.A.1.1.4 Develop descriptions, explanations, predictions, and models using evidence.  S8.A.1.2.1 Describe the positive and negative, intended and unintended, effects of specific scientific	Teacher made documents  Teacher prepared labs  Atlantic Magazine Article 50 Greatest Inventions Calculators Chromebooks DVD "Tapped" Follow direction Quiz Google Classroom Google Drive Google Form Google Sheets Lab on carbon sequestration Newsela website Prezi online slideshow Print out of notes for students Promethean Board Summative Assessment Video Worksheet Vocabulary Worksheet on carbon sequestration	Teacher prepared tests, quizzes, etc.  Series available assessments online. (Optional)	15 Days

**Dunmore School District  
Curriculum Guide**

<p><b>The Earth's processes affect and are affected by human activities.</b></p>	<p>S8.A.3.1 Explain the parts of a simple system, their roles, and their relationships to the system as a whole.</p> <p>S8.A.3.2 Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.</p> <p>S8.A.3.3 Describe repeated processes or recurring elements in natural, scientific, and technological patterns.</p> <p>S8.B.3.3 Explain how renewable and nonrenewable resources provide for human needs or how these needs impact the environment.</p> <p>S8.D.1.3 Describe characteristic features of Earth's water systems or their impact on resources.</p> <p><b>PA Academic Standards: Science</b></p> <p>3.1.7.A Explain the parts of a simple system and their relationship to each other.</p> <ul style="list-style-type: none"> <li>Describe a system as a group of related parts that work together to achieve a desired result (e.g.,</li> </ul>	<p>results or technological developments (e.g., air/space travel, genetic engineering, nuclear fission/fusion, artificial intelligence, lasers, organ transplants).</p> <p>S8.A.1.2.2 Identify environmental issues and explain their potential long-term health effects (e.g., pollution, pest controls, vaccinations).</p> <p>S8.A.1.2.3 Describe fundamental scientific or technological concepts that could solve practical problems (e.g., Newton's laws of motion, Mendelian genetics).</p> <p>S8.A.1.2.4 Explain society's standard of living in terms of technological advancements and how these advancements impact on agriculture (e.g., transportation, processing, production, storage).</p> <p>S8.A.1.3.1 Use ratio to describe change (e.g., percents, parts per million, grams per cubic centimeter, mechanical advantage).</p>	<p><b>youTube class review videos</b></p>		
--	--	---	---	--	--



**Dunmore School District  
Curriculum Guide**

	<p>digestive system).</p> <ul style="list-style-type: none"> <li>• Explain the importance of order in a system.</li> <li>• Distinguish between system inputs, system processes and system outputs.</li> <li>• Distinguish between open loop and closed loop systems.</li> <li>• Apply systems analysis to solve problems.</li> </ul> <p>3.1.7.B Describe the use of models as an application of scientific or technological concepts.</p> <ul style="list-style-type: none"> <li>• Identify and describe different types of models and their functions.</li> <li>• Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).</li> <li>• Explain systems by outlining a system's relevant parts and its purpose and/or designing a model that illustrates its function.</li> </ul> <p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> <li>• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</li> <li>• Describe scale as a form of ratio</li> </ul>	<p>S8.A.1.3.2 Use evidence, observations, or explanations to make inferences about change in systems over time (e.g., carrying capacity, succession, population dynamics, loss of mass in chemical reactions, indicator fossils in geologic time scale) and the variables affecting these changes.</p> <p>S8.A.1.3.3 Examine systems changing over time, identifying the possible variables causing this change, and drawing inferences about how these variables affect this change.</p> <p>S8.A.1.3.4 Given a scenario, explain how a dynamically changing environment provides for the sustainability of living systems.</p> <p>S8.A.2.1.1 Use evidence, observations, or a variety of scales (e.g., mass, distance, volume, temperature) to describe relationships.</p> <p>S8.A.2.1.4 Interpret data/observations; develop</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>and apply to a life situation.</p> <p>3.1.7.E Identify change as a variable in describing natural and physical systems.</p> <ul style="list-style-type: none"> <li>• Describe fundamental science and technology concepts that could solve practical problems.</li> <li>• Explain how ratio is used to describe change.</li> <li>• Describe the effect of making a change in one part of a system on the system as a whole.</li> </ul> <p>3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> <li>• Distinguish between a scientific theory and a belief.</li> <li>• Answer “What if” questions based on observation, inference or prior knowledge or experience.</li> <li>• Explain how skepticism about an accepted scientific explanation led to a new understanding.</li> <li>• Explain how new information may change existing theories and practice.</li> </ul> <p>3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> <li>• Measure materials using a variety of scales.</li> <li>• Describe relationships by</li> </ul>	<p>relationships among variables based on data/observations to design models as solutions.</p> <p>S8.A.2.2.1 Describe the appropriate use of instruments and scales to accurately and safely measure time, mass, distance, volume, or temperature under a variety of conditions.</p> <p>S8.A.2.2.2 Apply appropriate measurement systems (e.g., time, mass, distance, volume, temperature) to record and interpret observations under varying conditions.</p> <p>S8.A.2.2.3 Describe ways technology (e.g., microscope, telescope, micrometer, hydraulics, barometer) extends and enhances human abilities for specific purposes.</p> <p>S8.A.3.1.1 Describe a system (e.g., watershed, circulatory system, heating system, agricultural system) as a group of related parts with specific roles that work together to achieve an observed result.</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>making inferences and predictions.</p> <ul style="list-style-type: none"> <li>• Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment,</li> <li>• Design controlled experiments, recognize variables, and manipulate variables.</li> <li>• Interpret data, formulate models, design models, and produce solutions.</li> </ul> <p>3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> <li>• Generate questions about objects, organisms and/or events that can be answered through scientific investigations.</li> <li>• Evaluate the appropriateness of questions.</li> <li>• Design an investigation with limited variables to investigate a question.</li> <li>• Conduct a two-part experiment.</li> <li>• Judge the significance of experimental information in answering the question.</li> <li>• Communicate appropriate conclusions from the experiment.</li> </ul> <p>3.2.7.D Know and use the</p>	<p>S8.A.3.1.2 Explain the concept of order in a system [e.g., (first to last: manufacturing steps, trophic levels); (simple to complex: cell, tissue, organ, organ system)].</p> <p>S8.A.3.1.3 Distinguish among system inputs, system processes, system outputs, and feedback (e.g., physical, ecological, biological, informational).</p> <p>S8.A.3.1.4 Distinguish between open loop (e.g., energy flow, food web) and closed loop (e.g., materials in the nitrogen and carbon cycles, closed-switch) systems.</p> <p>S8.A.3.1.5 Explain how components of natural and human-made systems play different roles in a working system.</p> <p>S8.A.3.2.1 Describe how scientists use models to explore relationships in natural systems (e.g., an ecosystem, river system, the solar system).</p> <p>S8.A.3.2.2 Describe how</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>technological design process to solve problems.</p> <ul style="list-style-type: none"> <li>• Define different types of problems.</li> <li>• Define all aspects of the problem, necessary information and questions that must be answered.</li> <li>• Propose the best solution.</li> <li>• Design and propose alternative methods to achieve solutions.</li> <li>• Apply a solution.</li> <li>• Explain the results, present improvements, identify and infer the impacts of the solution.</li> </ul> <p>3.5.7.A Describe earth features and processes.</p> <ul style="list-style-type: none"> <li>• Describe major layers of the earth.</li> <li>• Describe the processes involved in the creation of geologic features (e.g., folding, faulting, volcanism, sedimentation) and that these processes seen today (e.g., erosion, weathering crustal plate movement) are similar to those in the past.</li> <li>• Describe the processes that formed Pennsylvania geologic structures and resources including mountains, glacial formations, water gaps and ridges.</li> <li>• Explain how the rock cycle</li> </ul>	<p>engineers use models to develop new and improved technologies to solve problems.</p> <p>S8.A.3.2.3 Given a model showing simple cause and-effect relationships in a natural system, predict results that can be used to test the assumptions in the model (e.g., photosynthesis, water cycle, diffusion, infiltration).</p> <p>S8.B.3.1.1 Explain the flow of energy through an ecosystem (e.g., food chains, food webs).</p> <p>S8.B.3.1.2 Identify major biomes and describe abiotic and biotic components (e.g., abiotic: different soil types, air, water sunlight; biotic: soil microbes, decomposers).</p> <p>S8.B.3.3.1 Explain how human activities may affect local, regional, and global environments.</p> <p>S8.B.3.3.2 Explain how renewable and nonrenewable resources provide for human needs (i.e., energy, food,</p>			
--	--	---	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>affected rock formations in the state of Pennsylvania.</p> <ul style="list-style-type: none"> <li>• Distinguish between examples of rapid surface changes (e.g., landslides, earthquakes) and slow surface changes (e.g., weathering).</li> <li>• Identify living plants and animals that are similar to fossil forms.</li> </ul> <p>3.5.7.C Describe basic elements of meteorology.</p> <ul style="list-style-type: none"> <li>• Explain weather forecasts by interpreting weather data and symbols.</li> <li>• Explain the oceans' impact on local weather and the climate of a region.</li> <li>• Identify how cloud types, wind directions and barometric pressure changes are associated with weather patterns in different regions of the country.</li> <li>• Explain and illustrate the processes of cloud formation and precipitation.</li> <li>• Describe and illustrate the major layers of the earth's atmosphere.</li> <li>• Identify different air masses and global wind patterns and how they relate to the weather patterns in different regions of the U.S.</li> </ul>	<p>water, clothing, and shelter).</p> <p>S8.B.3.3.3 Describe how waste management affects the environment (e.g., recycling, composting, landfills, incineration, sewage treatment).</p> <p>S8.D.1.3.1 Describe the water cycle and the physical processes on which it depends (i.e., evaporation, condensation, precipitation, transpiration, runoff, infiltration, energy inputs, and phase changes).</p> <p>S8.D.1.3.2 Compare and contrast characteristics of freshwater and saltwater systems on the basis of their physical characteristics (i.e., composition, density, and electrical conductivity) and their use as natural resources.</p> <p>S8.D.1.3.3 Distinguish among different water systems (e.g., wetland systems, ocean systems, river systems, watersheds) and describe their relationships to each other as well as to landforms.</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>3.5.7.D Explain the behavior and impact of the earth's water systems.</p> <ul style="list-style-type: none"> <li>• Explain the water cycle using the processes of evaporation and condensation.</li> <li>• Describe factors that affect evaporation and condensation.</li> <li>• Distinguish salt from fresh water (e.g., density, electrical conduction).</li> <li>• Compare the effect of water type (e.g., polluted, fresh, salt water) and the life contained in them.</li> <li>• Identify ocean and shoreline features, (e.g., bays, inlets, spit, tidal marshes).</li> </ul> <p><b>PA Core Standards: Reading for Science and Technical Subjects, 6-12</b> 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.</p> <p><b>PA Core Standards: Writing for Science and Technical Subjects, 6-12</b> 3.6 Writing</p>	<hr/> <p><b>Essential Knowledge/Skills:</b></p> <p><b>All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. The energy is derived from the sun and the earth's interior. These flows and cycles produce chemical and physical changes in Earth's materials and living organisms.</b></p> <p><b>Water continually cycles among geosphere, hydrosphere, biosphere, and atmosphere via transpiration, evaporation, condensation, and precipitation.</b></p> <p><b>Human activities influence Earth's global temperature, and these effects can be mitigated through applying knowledge of climate science, engineering, etc.</b></p> <p><b>Human activities have significantly altered the biosphere and geosphere, sometimes damaging or</b></p>			
--	--	---	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.</p>	<p><b>destroying natural habitats and causing the extinction of other species.</b></p> <p>Construct and analyze models to describe systems interactions among the geosphere, hydrosphere, atmosphere, and biosphere.</p> <p>Investigate water systems to identify seasonal and annual variations in precipitation and streamflow and the causes of those variations.</p> <p>Assess the physical characteristics of a stream to determine the types of organisms found within the stream environment.</p> <p>Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p> <p>Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p>			
--	---	---	--	--	--

**Dunmore School District  
Curriculum Guide**

		<b>Vocabulary:</b> Atmosphere Biosphere Geosphere Hydrosphere Flow rate Ocean systems River systems Watershed Wetland Biological diversity Stream Tributary Atmosphere Biosphere Carbon dioxide (CO <sub>2</sub> ) Climate Global warming			
--	--	---	--	--	--



**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
	PA Academic and Core Standards				
<b>Resources and the Environment</b>  <b>Nonrenewable Energy Sources</b>  <b>Renewable Energy Sources</b>  <b>The Earth's processes affect and are affected by human activities.</b>  <b>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</b>	<b>Anchor Descriptor:</b> S8.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).  S8.A.1.2 Identify and explain the impacts of applying scientific, environmental, or technological knowledge to address solutions to practical problems.  S8.A.1.3 Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.  S8.A.2.1 Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.  S8.A.2.2 Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.	<b>Eligible Content:</b> S8.A.2.1.6 Identify a design flaw in a simple technological system and devise possible working solutions.  S8.B.3.3.1 Explain how human activities may affect local, regional, and global environments.  S8.B.3.3.2 Explain how renewable and nonrenewable resources provide for human needs (i.e., energy, food, water, clothing, and shelter).  S8.C.2.2.1 Describe the Sun as the major source of energy that impacts the environment.  S8.C.2.2.2 Compare the time span of renewability for fossil fuels and the time span of renewability for alternative fuels.  S8.C.2.2.3 Describe the waste (i.e., kind and quantity) derived	<b>Teacher made documents</b>  <b>Teacher prepared labs</b>  <b>Chromebooks</b> <b>Google Classroom</b> <b>Google Drive</b> <b>Google Form</b> <b>Google Sheets</b> <b>Lab Kit on Renewable Energy Sources</b> <b>Newsela website</b> <b>Prezi online slideshow</b> <b>Print out of notes for students</b> <b>Promethean Board</b> <b>Summative Assessment Vocabulary</b> <b>Worksheet on Renewable Energy Sources Lab</b> <b>youTube class review videos</b>	<b>Teacher prepared tests, quizzes, etc.</b>  <b>Series available assessments online. (Optional)</b>	<b>15 Days</b>

**Dunmore School District  
Curriculum Guide**

	<p>S8.A.3.1 Explain the parts of a simple system, their roles, and their relationships to the system as a whole. Explain the parts of a simple system, their roles, and their relationships to the system as a whole.</p> <p>S8.A.3.2 Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.</p> <p>S8.B.3.2 Identify evidence of change to infer and explain the ways different variables may affect change in natural or human-made systems.</p> <p>S8.B.3.3 Explain how renewable and nonrenewable resources provide for human needs or how these needs impact the environment.</p> <p>S8.C.2.2 Compare the environmental impact of different energy sources chosen to support human endeavors.</p> <p><b>PA Academic Standards: Science</b> 3.1.7.A Explain the parts of a simple system and their</p>	<p>from the use of renewable and nonrenewable resources and their potential impact on the environment.</p> <p>S8.D.1.2.1 Describe a product's transformation process from production to consumption (e.g., prospecting, propagating, growing, maintaining, adapting, treating, converting, distributing, disposing) and explain the processes potential impact on Earth's resources.</p> <p>S8.D.1.2.2 Describe potential impacts of human made processes (e.g., manufacturing, agriculture, transportation, mining) on Earth's resources, both nonliving (i.e., air, water, or earth materials) and living (i.e., plants and animals).</p> <p>S8.D.1.3.2 Compare and contrast characteristics of freshwater and saltwater systems on the basis of their physical characteristics (i.e., composition, density, and electrical conductivity) and their use as natural resources.</p>			
--	--	---	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>relationship to each other.</p> <ul style="list-style-type: none"> <li>• Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).</li> <li>• Explain the importance of order in a system.</li> <li>• Distinguish between system inputs, system processes and system outputs.</li> <li>• Distinguish between open loop and closed loop systems.</li> <li>• Apply systems analysis to solve problems.</li> </ul> <p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> <li>• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</li> <li>• Describe scale as a form of ratio and apply to a life situation.</li> </ul> <p>3.1.7.E Identify change as a variable in describing natural and physical systems.</p> <ul style="list-style-type: none"> <li>• Describe fundamental science and technology concepts that could solve practical problems.</li> <li>• Explain how ratio is used to describe change.</li> <li>• Describe the effect of making a</li> </ul>	<p><b>Essential Knowledge/Skills:</b></p> <p><b>Humans depend on Earth's land, ocean, atmosphere, and living things for many different resources.</b></p> <p><b>Minerals, fresh water, and living resources are limited, and many are not renewable or replaceable over human lifetimes.</b></p> <p><b>Human activities have significantly altered the biosphere and geosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species.</b></p> <p>Describe a product's transformation process from production to consumption.</p> <p>Use maps and other data to explain how geologic processes have led to the uneven distribution of Earth's natural resources.</p> <p>Construct an argument supported by evidence for how</p>			
--	---	---	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>change in one part of a system on the system as a whole.</p> <p>3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> <li>• Distinguish between a scientific theory and a belief.</li> <li>• Answer “What if” questions based on observation, inference or prior knowledge or experience.</li> <li>• Explain how skepticism about an accepted scientific explanation led to a new understanding.</li> <li>• Explain how new information may change existing theories and practice.</li> </ul> <p>3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> <li>• Measure materials using a variety of scales.</li> <li>• Describe relationships by making inferences and predictions.</li> <li>• Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment,</li> <li>• Design controlled experiments, recognize variables, and manipulate variables.</li> <li>• Interpret data, formulate</li> </ul>	<p>increases in human population and per-capita consumption of natural resources impact Earth’s systems.</p> <p>Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment</p> <p><b>Vocabulary:</b>          Atmosphere          Consumption          Geosphere          Hydrosphere          Natural resources          Nonrenewable resources          Ore Production          Renewable resources          Climate</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>models, design models, and produce solutions.</p> <p>3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> <li>• Generate questions about objects, organisms and/or events that can be answered through scientific investigations.</li> <li>• Evaluate the appropriateness of questions.</li> <li>• Design an investigation with limited variables to investigate a question.</li> <li>• Conduct a two-part experiment.</li> <li>• Judge the significance of experimental information in answering the question.</li> <li>• Communicate appropriate conclusions from the experiment.</li> </ul> <p>3.2.7.D Know and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> <li>• Define different types of problems.</li> <li>• Define all aspects of the problem, necessary information and questions that must be answered.</li> <li>• Propose the best solution.</li> <li>• Design and propose alternative methods to achieve solutions.</li> </ul>				
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Apply a solution.</li> <li>• Explain the results, present improvements, identify and infer the impacts of the solution.</li> </ul> <p>3.5.7.A Describe earth features and processes.</p> <ul style="list-style-type: none"> <li>• Describe major layers of the earth.</li> <li>• Describe the processes involved in the creation of geologic features (e.g., folding, faulting, volcanism, sedimentation) and that these processes seen today (e.g., erosion, weathering crustal plate movement) are similar to those in the past.</li> <li>• Describe the processes that formed Pennsylvania geologic structures and resources including mountains, glacial formations, water gaps and ridges.</li> <li>• Explain how the rock cycle affected rock formations in the state of Pennsylvania.</li> <li>• Distinguish between examples of rapid surface changes (e.g., landslides, earthquakes) and slow surface changes (e.g., weathering).</li> <li>• Identify living plants and animals that are similar to fossil forms.</li> </ul> <p>3.5.7.B Recognize earth resources</p>				
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>and how they affect everyday life.</p> <ul style="list-style-type: none"> <li>• Identify and locate significant earth resources (e.g., rock types, oil, gas, coal deposits) in Pennsylvania.</li> <li>• Explain the processes involved in the formation of oil and coal in Pennsylvania.</li> <li>• Explain the value and uses of different earth resources (e.g., selected minerals, ores, fuel sources, agricultural uses).</li> <li>• Compare the locations of human settlements as related to available resources.</li> </ul> <p><b>PA Core Standards:</b> <b>Reading for Science and Technical Subjects, 6-12</b> 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.</p> <p><b>PA Core Standards: Writing for Science and Technical Subjects, 6-12</b> 3.6 Writing Students write for different purposes and audiences. Students write clear and focused</p>				
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	text to convey a well-defined perspective and appropriate content.				
--	--	--	--	--	--



**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
	PA Academic and Core Standards				
<b>Earth History</b>  <b>Minerals</b>  <b>Earth is a Rock</b>  <b>Weathering and Erosion</b>  <b>Deposition</b>  <b>Fossils and Past Environments</b>  <b>Rock Cycle</b>  <b>Plate Tectonics, Volcanoes, and Earthquakes</b>  <b>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that</b>	<b>Anchor Descriptor:</b> S8.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).  S8.A.1.2 Identify and explain the impacts of applying scientific, environmental, or technological knowledge to address solutions to practical problems.  S8.A.1.3 Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.  S8.A.2.1 Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.  S8.A.2.2 Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.	<b>Eligible Content:</b> S8.D.1.1.1 Explain the rock cycle as changes in the solid earth and rock types (igneous – granite, basalt, obsidian, pumice; sedimentary – limestone, sandstone, shale, coal; and metamorphic – slate, quartzite, marble, gneiss).  S8.D.1.1.2 Describe natural processes that change Earth’s surface (e.g., landslides, volcanic eruptions, earthquakes, mountain building, new land being formed, weathering, erosion, sedimentation, soil formation).  S8.D.1.1.3 Identify soil types (i.e., humus, topsoil, subsoil, loam, loess, and parent material) and their characteristics (i.e., particle size, porosity, and permeability) found in different biomes and in Pennsylvania, and explain how they formed.	Teacher made documents  Teacher prepared labs  Chromebooks DVD Birth of Earth DVD Grand Canyon DVD PBS Making America FOSS Lab Workbook/Worksheets FOSS online animations/digital content FOSS Reference Book Google Classroom Google Drive Google Form Google Sheets Lab activity comparing rocks from two locations at the Grand Canyon Lab activity identifying limestone, sandstone, and shale Lab model formation of Grand Canyon and steam table Lab activity on types of sand	Teacher prepared tests, quizzes, etc.  Series available assessments online. (Optional)	58 Days

**Dunmore School District  
Curriculum Guide**

<p><b>interact over a wide range of temporal and spatial scales.</b></p>	<p>S8.A.3.1 Explain the parts of a simple system, their roles, and their relationships to the system as a whole.</p> <p>S8.A.3.2 Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.</p> <p>S8.B.3.2 Identify evidence of change to infer and explain the ways different variables may affect change in natural or human-made systems.</p> <p>S8.D.1.1 Describe constructive and destructive natural processes that form different geologic structures and resources.</p> <p><b>PA Academic Standards: Science</b></p> <p>3.1.7.A Explain the parts of a simple system and their relationship to each other.</p> <ul style="list-style-type: none"> <li>• Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).</li> <li>• Explain the importance of order in a system.</li> <li>• Distinguish between system</li> </ul>	<p>S8.D.1.1.4 Explain how fossils provide evidence about plants and animals that once lived throughout Pennsylvania's history (e.g., fossils provide evidence of different environments).</p> <hr/> <p><b>Essential Knowledge/Skills:</b></p> <p><b>All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. The energy is derived from the sun and the earth's interior. These flows and cycles produce chemical and physical changes in Earth's materials and living organisms.</b></p> <p><b>Major events in Earth's history leave evidence in the geologic record that allow the construction of a geologic time scale based on relative ages.</b></p> <p><b>The Earth's systems interact on various time and size scales. These interactions</b></p>	<p><b>Lab activity making sedimentary rock layers</b>  <b>Lab activity on calcium carbonate and lime water</b>  <b>Lab activity crystals size and formation</b>  <b>Lab activity igneous and metamorphic rocks</b>  <b>Lab Kit on Plate Tectonics</b>  <b>Newsela website</b>  <b>PBS Worksheet on deep time</b>  <b>Prezi online slideshow</b>  <b>Print out of notes for students</b>  <b>Promethean Board</b>  <b>Summative Assessment</b>  <b>Video worksheet</b>  <b>Video on weathering and erosion</b>  <b>Vocabulary</b>  <b>Worksheet on Plate Tectonics Lab</b>  <b>youTube class review videos</b></p>		
--	--	---	---	--	--

**Dunmore School District  
Curriculum Guide**

	<p>inputs, system processes and system outputs.</p> <ul style="list-style-type: none"> <li>• Distinguish between open loop and closed loop systems.</li> <li>• Apply systems analysis to solve problems.</li> </ul> <p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> <li>• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</li> <li>• Describe scale as a form of ratio and apply to a life situation.</li> </ul> <p>3.1.7.E Identify change as a variable in describing natural and physical systems.</p> <ul style="list-style-type: none"> <li>• Describe fundamental science and technology concepts that could solve practical problems.</li> <li>• Explain how ratio is used to describe change.</li> <li>• Describe the effect of making a change in one part of a system on the system as a whole.</li> </ul> <p>3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> <li>• Distinguish between a scientific theory and a belief.</li> <li>• Answer “What if” questions</li> </ul>	<p><b>have shaped Earth’s history and will determine its future.</b></p> <p><b>Plate tectonics is the unifying theory that explains the past, and current, and future movements of the rocks at Earth’s surface and provides a framework for understanding its geological history. Tectonic processes continually generate new ocean seafloor at ridges and destroy old seafloor at trenches.</b></p> <p><b>Some natural hazards such as volcanic eruptions and severe weather may be preceded by phenomena that allow for reliable prediction. Others such as earthquakes occur suddenly with no notice and are not yet predictable.</b></p> <p><b>Evolution is shaped by Earth’s varying geological and environmental conditions. Sudden changes in conditions (e.g., meteor impacts, major volcanic eruptions) have caused mass extinctions, but these changes, as well as more gradual ones, have ultimately allowed other life forms to</b></p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>based on observation, inference or prior knowledge or experience.</p> <ul style="list-style-type: none"> <li>• Explain how skepticism about an accepted scientific explanation led to a new understanding.</li> <li>• Explain how new information may change existing theories and practice.</li> </ul> <p>3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> <li>• Measure materials using a variety of scales.</li> <li>• Describe relationships by making inferences and predictions.</li> <li>• Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment,</li> <li>• Design controlled experiments, recognize variables, and manipulate variables.</li> <li>• Interpret data, formulate models, design models, and produce solutions.</li> </ul> <p>3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> <li>• Generate questions about objects, organisms and/or events</li> </ul>	<p><b>flourish.</b></p> <p><b>Minerals, fresh water, and living resources are limited, and many are not renewable or replaceable over human lifetimes.</b></p> <p>Classify rocks as one of three different types and explain the interrelationship of the rock types as part of the rock cycle. (e.g., igneous: granite, basalt, obsidian, pumice; sedimentary: limestone, sandstone, shale, coal; and metamorphic: slate, quartzite, marble, gneiss).</p> <p>Plan and carry out investigations that investigate models of the chemical and physical processes that cycle earth materials and form rocks.</p> <p>Compare and contrast various soil types and their characteristics found in different biomes (e.g, regionally, nationally, globally) and explain how they were formed.</p> <p>Use geologic evidence to</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>that can be answered through scientific investigations.</p> <ul style="list-style-type: none"> <li>• Evaluate the appropriateness of questions.</li> <li>• Design an investigation with limited variables to investigate a question.</li> <li>• Conduct a two-part experiment.</li> <li>• Judge the significance of experimental information in answering the question.</li> <li>• Communicate appropriate conclusions from the experiment.</li> </ul> <p>3.2.7.D Know and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> <li>• Define different types of problems.</li> <li>• Define all aspects of the problem, necessary information and questions that must be answered.</li> <li>• Propose the best solution.</li> <li>• Design and propose alternative methods to achieve solutions.</li> <li>• Apply a solution.</li> <li>• Explain the results, present improvements, identify and infer the impacts of the solution.</li> </ul> <p>3.4.7.B Relate energy sources and transfers to heat and temperature.</p>	<p>construct patterns and determine the relative ages and sequence of geologic events in Earth's 4.6 billion year history.</p> <p>Construct an explanation based on evidence for how various processes have changed Earth's surface at varying time and spatial scales (e.g., short-term deposition vs. mountain building; short-term weathering and erosion vs. canyon or valley formation).</p> <p>Develop and use models of past plate motions to support explanations of existing patterns in the fossil record, rock record, continental shapes and seafloor structures.</p> <p>Incorporate a variety of data including geological evidence from maps and representations of current plate motions to predict future plate motions.</p> <p>Use models to explain how the flow of energy (convection of heat) drives the cycling of matter between Earth's</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Identify and describe sound changes in moving objects.</li> <li>• Know that the sun is a major source of energy that emits wavelengths of visible light, infrared and ultraviolet radiation.</li> <li>• Explain the conversion of one form of energy to another by applying knowledge of each form of energy.</li> <li>• Explain the parts and functions in an electrical circuit.</li> </ul> <p>3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Compare various planets' characteristics.</li> <li>• Describe basic star types and identify the sun as a star type.</li> <li>• Describe and differentiate comets, asteroids and meteors.</li> <li>• Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.</li> <li>• Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month.</li> <li>• Identify equipment and</li> </ul>	<p>surface and deep interior.</p> <p>Investigate or develop a map of the past and present natural hazards in a region to demonstrate an understanding of forecasting the likelihood of future events and to inform designs for development of technologies to mitigate their effects.</p> <p>Use evidence from the rock and fossil records to construct arguments that explain how past changes in earth's conditions have caused major extinctions of some life forms and allowed others to flourish.</p> <p>Use maps and other data to explain how geologic processes have led to the uneven distribution of Earth's natural resources.</p> <p><b>Vocabulary:</b>  Abrasion  Absolute age  Anthropocene  Asthenosphere  Basin  Beach</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>instruments that explore the universe.</p> <ul style="list-style-type: none"> <li>• Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.</li> <li>• Identify and articulate space program efforts to investigate possibilities of living in space and on other planets.</li> </ul> <p>3.5.7.A Describe earth features and processes.</p> <ul style="list-style-type: none"> <li>• Describe major layers of the earth.</li> <li>• Describe the processes involved in the creation of geologic features (e.g., folding, faulting, volcanism, sedimentation) and that these processes seen today (e.g., erosion, weathering crustal plate movement) are similar to those in the past.</li> <li>• Describe the processes that formed Pennsylvania geologic structures and resources including mountains, glacial formations, water gaps and ridges.</li> <li>• Explain how the rock cycle affected rock formations in the state of Pennsylvania.</li> <li>• Distinguish between examples of rapid surface changes (e.g.,</li> </ul>	<p>Bedding Biome Calcite Canyon Cenozoic Chalk Composition Constructive processes Continent Continental drift Convection Convergence Coquina Core Correlate Cross-bedding Cross-section Crust Crust Crystal Debris fan Delta Deposition Destructive processes Divergence Dune Earthquake Ecology Energy flow Eon Epoch Era Erosion Eruption</p>			
--	--	---	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>landslides, earthquakes) and slow surface changes (e.g., weathering).</p> <ul style="list-style-type: none"> <li>Identify living plants and animals that are similar to fossil forms.</li> </ul> <p>3.5.7.B Recognize earth resources and how they affect everyday life.</p> <ul style="list-style-type: none"> <li>Identify and locate significant earth resources (e.g., rock types, oil, gas, coal deposits) in Pennsylvania.</li> <li>Explain the processes involved in the formation of oil and coal in Pennsylvania.</li> <li>Explain the value and uses of different earth resources (e.g., selected minerals, ores, fuel sources, agricultural uses).</li> <li>Compare the locations of human settlements as related to available resources.</li> </ul> <p><b>PA Core Standards: Reading for Science and Technical Subjects, 6-12</b></p> <p>3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.</p>	<p>Exposure Extinction Extrusive Fault Flood Floodplain Formation Fossil Fossil record Frosted Geologic time Geological time Geology Geoscientist Geosphere Headwaters Historical geology Igneous rock Index Index fossils Inner core Intrusive Journal Landform Lava Law of fossil succession Law of superposition Layer Lithification Lithosphere Magma Mantle Mass Matrix</p>			
--	--	--	--	--	--



**Dunmore School District  
Curriculum Guide**

	<p><b>PA Core Standards: Writing for Science and Technical Subjects, 6-12</b></p> <p>3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.</p>	<p>Mesozoic Metamorphic rock Meteor impact Mineral Molten Monocline Mountain Natural Öolith Outcrop Outer core Oxidation Paleontologist Paleontology Paleozoic Period Plain Plate motion Plate tectonics Plateau Precambrian Rapids Reef limestone Relative age Resources Rock Rock cycle Rock record Salol Sample Scale Seafloor Spreading Sediment Sedimentary rock</p>			
--	---	---	--	--	--

**Dunmore School District  
Curriculum Guide**

		Soil horizons Solution Sorting Stalactite Stalagmite Strata Stratigraphy Superposition Travertine Tsunami Tufa Uniformitarianism Uplift Valley Volcanic Volcanoes Weathering			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
	PA Academic and Core Standards				
<b>Weather and Water</b>  <b>Where's the Air?</b>  <b>Air Pressure and Wind</b>  <b>Convection</b>  <b>Radiation</b>  <b>Conduction</b>  <b>Air Flow</b>  <b>Water in the Air</b>  <b>Oceans</b>  <b>Human Caused Climate Change</b>  <b>Meteorology</b>  <b>The universe is composed of a variety of different objects which are organized into systems, each of</b>	<b>Anchor Descriptor:</b> S8.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).  S8.A.1.2 Identify and explain the impacts of applying scientific, environmental, or technological knowledge to address solutions to practical problems.  S8.A.1.3 Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.  S8.A.2.1 Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.  S8.A.2.2 Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.  S8.A.3.1 Explain the parts of a	<b>Eligible Content:</b> S8.A.2.2.1 Describe the appropriate use of instruments and scales to accurately and safely measure time, mass, distance, volume, or temperature under a variety of conditions.  S8.A.2.2.2 Apply appropriate measurement systems (e.g., time, mass, distance, volume, temperature) to record and interpret observations under varying conditions.  S8.A.2.2.3 Describe ways technology (e.g., microscope, telescope, micrometer, hydraulics, barometer) extends and enhances human abilities for specific purposes.  S8.A.3.1.1 Describe a system (e.g., watershed, circulatory system, heating system, agricultural system) as a group of related parts with specific roles that work together to achieve an observed result.	Teacher made documents  Teacher prepared labs  Chromebooks Climate Change Video worksheet DVD Brain Games In Living Color DVD Climate Change Nat Geo Bill Nye FOSS Lab Workbook/Worksheets FOSS online animations/digital content FOSS Reference Book Google Classroom Google Drive Google Form Google Sheets IR Thermal Camera Lab activity gas in syringe Lab activity does air have mass using balloons Lab activity pressure in a jar Lab activity hard boiled egg in a glass bottle Lab activity layering salt	Teacher prepared tests, quizzes, etc.  Series available assessments online. (Optional)	63 Days

**Dunmore School District  
Curriculum Guide**

<p><b>which develops according to accepted physical processes and laws.</b></p> <p><b>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</b></p> <p><b>The Earth's processes affect and are affected by human activities.</b></p>	<p>simple system, their roles, and their relationships to the system as a whole.</p> <p>S8.A.3.2 Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.</p> <p>S8.A.3.3 Describe repeated processes or recurring elements in natural, scientific, and technological patterns.</p> <p>S8.C.2.1 Describe energy sources, transfer of energy, or conversion of energy.</p> <p>S8.C.2.2 Compare the environmental impact of different energy sources chosen to support human endeavors.</p> <p>S8.D.1.3 Describe characteristic features of Earth's water systems or their impact on resources.</p> <p>S8.D.2.1 Explain how pressure, temperature, moisture, and wind are used to describe atmospheric conditions that affect regional weather or climate.</p> <p>S8.D.3.1 Explain the relationships</p>	<p>S8.A.3.1.2 Explain the concept of order in a system [e.g., (first to last: manufacturing steps, trophic levels); (simple to complex: cell, tissue, organ, organ system)].</p> <p>S8.A.3.2.1 Describe how scientists use models to explore relationships in natural systems (e.g., an ecosystem, river system, the solar system).</p> <p>S8.A.3.2.2 Describe how engineers use models to develop new and improved technologies to solve problems.</p> <p>S8.A.3.2.3 Given a model showing simple cause and-effect relationships in a natural system, predict results that can be used to test the assumptions in the model (e.g., photosynthesis, water cycle, diffusion, infiltration).</p> <p>S8.A.3.3.1 Identify and describe patterns as repeated processes or recurring elements in human-made systems (e.g., trusses, hub-and-spoke system in</p>	<p><b>solutions</b></p> <p><b>Lab activity layering hot and cold water</b></p> <p><b>Lab demonstration convection chamber</b></p> <p><b>Lab Kit on Physical Oceanography sections 2, 3, 8, &amp; 10</b></p> <p><b>Lab activity solar radiation heating the Earth</b></p> <p><b>Lab activity on Radiation and Energy Transfer</b></p> <p><b>Sun and Seasons</b></p> <p><b>animated graphic</b></p> <p><b>Direct Solar Energy demonstration</b></p> <p><b>Lab activity on Conduction Aluminum and Steel in hot water</b></p> <p><b>Lab on relative humidity</b></p> <p><b>Lab activity on condensation and dew point</b></p> <p><b>Lab activity Charles Law</b></p> <p><b>Lab activity making a Cloud in a bottle</b></p> <p><b>Prezi online slideshow</b></p> <p><b>Print out of notes for students</b></p> <p><b>Promethean Board</b></p> <p><b>Summative Assessment</b></p> <p><b>Vocabulary</b></p> <p><b>Volume Metric Flask</b></p>		
--	--	---	---	--	--

**Dunmore School District  
Curriculum Guide**

	<p>between and among the objects of our solar system.</p> <p><b>PA Academic Standards: Science</b></p> <p>3.1.7.A Explain the parts of a simple system and their relationship to each other.</p> <ul style="list-style-type: none"> <li>• Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).</li> <li>• Explain the importance of order in a system.</li> <li>• Distinguish between system inputs, system processes and system outputs.</li> <li>• Distinguish between open loop and closed loop systems.</li> <li>• Apply systems analysis to solve problems.</li> </ul> <p>3.1.7.B Describe the use of models as an application of scientific or technological concepts.</p> <ul style="list-style-type: none"> <li>• Identify and describe different types of models and their functions.</li> <li>• Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).</li> <li>• Explain systems by outlining a system's relevant parts and its</li> </ul>	<p>communications and transportation systems, feedback controls in regulated systems).</p> <p>S8.A.3.3.2 Describe repeating structure patterns in nature (e.g., veins in a leaf, tree rings, crystals, water waves) or periodic patterns (e.g., daily, monthly, annually).</p> <p>S8.C.2.1.1 Distinguish among forms of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) and sources of energy (i.e., renewable and nonrenewable energy)</p> <p>S8.C.2.1.2 Explain how energy is transferred from one place to another through convection, conduction, or radiation.</p> <p>S8.C.2.2.1 Describe the Sun as the major source of energy that impacts the environment.</p> <p>S8.D.1.3.1 Describe the water cycle and the physical processes on which it depends (i.e., evaporation, condensation, precipitation,</p>	<p><b>Worksheet on Physical Oceanography Lab</b> <b>youTube class review videos</b></p>		
--	--	--	---	--	--

**Dunmore School District  
Curriculum Guide**

	<p>purpose and/or designing a model that illustrates its function.</p> <p>3.1.7.C Identify patterns as repeated processes or recurring elements in science and technology.</p> <ul style="list-style-type: none"> <li>• Identify different forms of patterns and use them to group and classify specific objects.</li> <li>• Identify repeating structure patterns.</li> <li>• Identify and describe patterns that occur in physical systems (e.g., construction, manufacturing, transportation), informational systems and biochemical-related systems.</li> </ul> <p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> <li>• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</li> <li>• Describe scale as a form of ratio and apply to a life situation.</li> </ul> <p>3.1.7.E Identify change as a variable in describing natural and physical systems.</p> <ul style="list-style-type: none"> <li>• Describe fundamental science and technology concepts that</li> </ul>	<p>transpiration, runoff, infiltration, energy inputs, and phase changes).</p> <p>S8.D.1.3.2 Compare and contrast characteristics of freshwater and saltwater systems on the basis of their physical characteristics (i.e., composition, density, and electrical conductivity) and their use as natural resources.</p> <p>S8.D.1.3.3 Distinguish among different water systems (e.g., wetland systems, ocean systems, river systems, watersheds) and describe their relationships to each other as well as to landforms.</p> <p>S8.D.1.3.4 Identify the physical characteristics of a stream and how these characteristics determine the types of organisms found within the stream environment (e.g., biological diversity, water quality, flow rate, tributaries, surrounding watershed).</p> <p>S8.D.2.1.1 Explain the impact of water systems on the local weather or the climate of a</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>could solve practical problems.</p> <ul style="list-style-type: none"> <li>• Explain how ratio is used to describe change.</li> <li>• Describe the effect of making a change in one part of a system on the system as a whole.</li> </ul> <p>3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> <li>• Distinguish between a scientific theory and a belief.</li> <li>• Answer “What if” questions based on observation, inference or prior knowledge or experience.</li> <li>• Explain how skepticism about an accepted scientific explanation led to a new understanding.</li> <li>• Explain how new information may change existing theories and practice.</li> </ul> <p>3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> <li>• Measure materials using a variety of scales.</li> <li>• Describe relationships by making inferences and predictions.</li> <li>• Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment,</li> </ul>	<p>region (e.g., lake effect snow, land/ocean breezes).</p> <p>S8.D.2.1.2 Identify how global patterns of atmospheric movement influence regional weather and climate.</p> <p>S8.D.2.1.3 Identify how cloud types, wind directions, and barometric pressure changes are associated with weather patterns in different regions of the country.</p> <p>S8.D.3.1.1 Describe patterns of earth’s movements (i.e., rotation and revolution) in relation to the moon and sun (i.e., phases, eclipses, and tides)</p> <hr/> <p><b>Essential Knowledge/Skills:</b></p> <p><b>Earth’s spin axis is fixed in direction and tilted relative to its orbit around the sun. The seasons are a result of the Earth’s tilt on its axis and are caused by the differential intensity of sunlight on different areas of Earth throughout the year.</b></p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Design controlled experiments, recognize variables, and manipulate variables.</li> <li>• Interpret data, formulate models, design models, and produce solutions.</li> </ul> <p>3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> <li>• Generate questions about objects, organisms and/or events that can be answered through scientific investigations.</li> <li>• Evaluate the appropriateness of questions.</li> <li>• Design an investigation with limited variables to investigate a question.</li> <li>• Conduct a two-part experiment.</li> <li>• Judge the significance of experimental information in answering the question.</li> <li>• Communicate appropriate conclusions from the experiment.</li> </ul> <p>3.2.7.D Know and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> <li>• Define different types of problems.</li> <li>• Define all aspects of the problem, necessary information and questions that must be</li> </ul>	<p><b>Water continually cycles among geosphere, hydrosphere, biosphere, and atmosphere via transpiration, evaporation, condensation, and precipitation.</b></p> <p><b>Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude and local and regional geography resulting in complex patterns that are predicted with varying degrees of reliability.</b></p> <p><b>The ocean and other large bodies of water exert a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents that are driven by differences in density relative to temperature and salinity.</b></p> <p><b>Human activities influence Earth's global temperature, and these effects can be</b></p>			
--	---	--	--	--	--



**Dunmore School District  
Curriculum Guide**

	<p>answered.</p> <ul style="list-style-type: none"> <li>• Propose the best solution.</li> <li>• Design and propose alternative methods to achieve solutions.</li> <li>• Apply a solution.</li> <li>• Explain the results, present improvements, identify and infer the impacts of the solution.</li> </ul> <p>3.4.4.D Describe the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Recognize earth's place in the solar system.</li> <li>• Explain and illustrate the causes of seasonal changes.</li> <li>• Identify planets in our solar system and their general characteristics.</li> <li>• Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses.</li> </ul> <p>3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Compare various planets' characteristics.</li> <li>• Describe basic star types and identify the sun as a star type.</li> <li>• Describe and differentiate comets, asteroids and meteors.</li> </ul>	<p><b>mitigated through applying knowledge of climate science, engineering, etc.</b></p> <p><b>Human activities have significantly altered the biosphere and geosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species.</b></p> <p>Use models of Earth's orientation and motion to explain how changes in intensity and duration of daily sunlight lead to seasons.</p> <p>Identify and explain the position and orientation of the Earth as it orbits the Sun.</p> <p>Develop models for the movement of water within the Earth's spheres (i.e., geosphere, hydrosphere, biosphere, atmosphere).</p> <p>Compare and contrast characteristics of freshwater and saltwater systems on the basis of their physical characteristics.</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.</li> <li>• Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month.</li> <li>• Identify equipment and instruments that explore the universe.</li> <li>• Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.</li> <li>• Identify and articulate space program efforts to investigate possibilities of living in space and on other planets.</li> </ul> <p>3.5.7.C Describe basic elements of meteorology.</p> <ul style="list-style-type: none"> <li>• Explain weather forecasts by interpreting weather data and symbols.</li> <li>• Explain the oceans' impact on local weather and the climate of a region.</li> <li>• Identify how cloud types, wind directions and barometric pressure changes are associated</li> </ul>	<p>Investigate water systems to identify seasonal and annual variations in precipitation and streamflow and the causes of those variations.</p> <p>Assess the physical characteristics of a stream to determine the types of organisms found within the stream environment.</p> <p>Collect data and generate evidence to show how changes in weather conditions result from the movement, interactions, and area of origin of air masses (e.g., cold, dry Canadian air mass vs. warm, moist southern air mass).</p> <p>Construct and use models to support the explanation of how the uneven distribution of solar energy affects global patterns in atmospheric and oceanic circulation.</p> <p>Analyze weather patterns using cloud types, wind directions, and barometric pressure.</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>with weather patterns in different regions of the country.</p> <ul style="list-style-type: none"> <li>• Explain and illustrate the processes of cloud formation and precipitation.</li> <li>• Describe and illustrate the major layers of the earth's atmosphere.</li> <li>• Identify different air masses and global wind patterns and how they relate to the weather patterns in different regions of the U.S.</li> </ul> <p>3.5.7.D Explain the behavior and impact of the earth's water systems.</p> <ul style="list-style-type: none"> <li>• Explain the water cycle using the processes of evaporation and condensation.</li> <li>• Describe factors that affect evaporation and condensation.</li> <li>• Distinguish salt from fresh water (e.g., density, electrical conduction).</li> <li>• Compare the effect of water type (e.g., polluted, fresh, salt water) and the life contained in them.</li> <li>• Identify ocean and shoreline features, (e.g., bays, inlets, spit, tidal marshes).</li> </ul> <p><b>PA Core Standards: Reading for Science and Technical</b></p>	<p>Construct explanations from models of oceanic and atmospheric circulation, and for the development of local and regional climates.</p> <p>Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p> <p>Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p> <p><b>Vocabulary:</b> Absorb Air Air mass Air pressure Altimeter Altitude Anemometer Aneroid barometer Anthropocene Aphelion Atmosphere Atom Axis Barometer</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p><b>Subjects, 6-12</b>  3.5 Reading Informational Text  Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.</p> <p><b>PA Core Standards: Writing for Science and Technical Subjects, 6-12</b>  3.6 Writing  Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.</p>	Bimetallic strip Biosphere Blizzard Carbon dioxide (CO2) Cirrus Climate Climatology Cloud Compass Condensation Condensation nucleus Conduction Contract Convection Convection cell Coriolis effect Cumuliform Cumulus Cyclical pattern Density Dew Dew point Downburst Drought Dust devil Dust storm Earth Energy Equinox Evaporation Exosphere Expand Eye Flash flood			
--	--	---	--	--	--

**Dunmore School District  
Curriculum Guide**

		Flood Flow rate Fluid Freshwater Frost Geography Glacier Global warming Global wind Greenhouse effect Groundwater Hail Heat Humidity Hurricane Hydrosphere Hygrometer Icecap Infiltration Ionosphere Kinetic energy Land breeze Latitude Lightning Liquid crystal Local wind Mass Matter Mesosphere Meteorologist Meteorology Methane Microburst Millibar			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

		Molecule Nitrogen Ocean systems Oceanic circulation Orbit Orientation Oxygen Ozone Perihelion Permanent gas Photosynthesis Position Precipitation Prevailing wind direction Radiant energy Radiation Radiosonde Ray Relative humidity Reradiate Revolution River systems Rotation Runoff Salinity Saltwater Saturated Sea breeze Season Solar energy Solstice Step leader Straight-line wind Stratiform			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

		Stratosphere Stratus Temperature Thermometer Thermosphere Thunder Thunderstorm Tilt Tornado Transfer Transpiration Tributary Troposphere Typhoon Variable gas Volume Water cycle Water System Water vapor Watershed Waterspout Weather Weather balloon Weather factors Weather Front Wetland Wind Windstorm			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
	PA Academic and Core Standards				
<b>Origins the Sun, the Solar System, and our Moon</b>  <b>What is our Cosmic Address?</b>  <b>The Big Bang Theory</b>  <b>Origins of the Sun</b>  <b>How have observations made by scientists in the past contributed to our understanding of the Sun and the Universe?</b>  <b>What is the Sun's structure and source of energy?</b>  <b>How did the Moon from?</b>  <b>What are the Moon's properties?</b>	<b>Anchor Descriptor:</b> S8.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).  S8.A.1.2 Identify and explain the impacts of applying scientific, environmental, or technological knowledge to address solutions to practical problems.  S8.A.1.3 Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.  S8.A.2.1 Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.  S8.A.2.2 Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.  S8.A.3.1 Explain the parts of a	<b>Eligible Content:</b> S8.A.2.2.1 Describe the appropriate use of instruments and scales to accurately and safely measure time, mass, distance, volume, or temperature under a variety of conditions.  S8.A.2.2.2 Apply appropriate measurement systems (e.g., time, mass, distance, volume, temperature) to record and interpret observations under varying conditions.  S8.A.2.2.3 Describe ways technology (e.g., microscope, telescope, micrometer, hydraulics, barometer) extends and enhances human abilities for specific purposes.  S8.C.1.1.2 Use characteristic physical or chemical properties to distinguish one substance from another (e.g., density, thermal expansion/contraction, freezing/melting points, streak test).	<b>Teacher made documents</b>  <b>Teacher prepared labs</b>  <b>Chromebooks</b> <b>Google Classroom</b> <b>Google Drive</b> <b>Google Form</b> <b>Google Sheets</b> <b>Lab on Relativity and Gravity</b> <b>Lab on stars and outer solar system</b> <b>Video on the Sun with worksheet</b> <b>Activities and demonstrations with Telescope</b> <b>Activity with the phases of the Moon</b> <b>Video on the Moon with worksheet</b>	<b>Teacher prepared tests, quizzes, etc.</b>  <b>Series available assessments online. (Optional)</b>	<b>14 Days</b>



**Dunmore School District  
Curriculum Guide**

<p><b>The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws.</b></p>	<p>simple system, their roles, and their relationships to the system as a whole.</p> <p>S8.A.3.2 Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.</p> <p>S8.A.3.3 Describe repeated processes or recurring elements in natural, scientific, and technological patterns.</p> <p>S8.C.1.1 Explain concepts about the structure and properties (physical and chemical) of matter.</p> <p>S8.C.2.1 Describe energy sources, transfer of energy, or conversion of energy.</p> <p>S8.C.3.1 Describe the effect of multiple forces on the movement, speed, or direction of an object.</p> <p>S8.D.3.1 Explain the relationships between and among the objects of our solar system.</p> <p><b>PA Academic Standards: Science</b></p> <p>3.1.7.A Explain the parts of a simple system and their</p>	<p>S8.C.2.1.1 Distinguish among forms of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) and sources of energy (i.e., renewable and nonrenewable energy) radiation.</p> <p>S8.C.2.1.3 Describe how one form of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) can be converted into a different form of energy.</p> <p>S8.C.3.1.1 Describe forces acting on objects (e.g., friction, gravity, balanced versus unbalanced).</p> <p>S8.D.3.1.1 Describe patterns of earth's movements (i.e., rotation and revolution) in relation to the moon and sun (i.e., phases, eclipses, and tides)</p> <p>S8.D.3.1.2 Describe the role of gravity as the force that governs the movement of the solar system and universe.</p> <p>S8.D.3.1.3 Compare and</p>			
---	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>relationship to each other.</p> <ul style="list-style-type: none"> <li>• Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).</li> <li>• Explain the importance of order in a system.</li> <li>• Distinguish between system inputs, system processes and system outputs.</li> <li>• Distinguish between open loop and closed loop systems.</li> <li>• Apply systems analysis to solve problems.</li> </ul> <p>3.1.7.B Describe the use of models as an application of scientific or technological concepts.</p> <ul style="list-style-type: none"> <li>• Identify and describe different types of models and their functions.</li> <li>• Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).</li> <li>• Explain systems by outlining a system's relevant parts and its purpose and/or designing a model that illustrates its function.</li> </ul> <p>3.1.7.C Identify patterns as repeated processes or recurring elements in science and technology.</p>	<p>contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).</p> <hr/> <p><b>Essential Knowledge/Skills:</b></p> <p><b>The phases of the Moon are caused by the orbit of the moon around the Earth.</b></p> <p><b>Observable patterns and changes in tides are caused by the Earth-Moon-Sun system.</b></p> <p><b>Earth's spin axis is fixed in direction and tilted relative to its orbit around the sun. The seasons are a result of the Earth's tilt on its axis and are caused by the differential intensity of sunlight on different areas of Earth throughout the year.</b></p> <p><b>Earth and its solar system are part of the Milky Way Galaxy, which is one of many galaxies in the universe.</b></p> <p>Identify and explain monthly patterns in the phases of the</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Identify different forms of patterns and use them to group and classify specific objects.</li> <li>• Identify repeating structure patterns.</li> <li>• Identify and describe patterns that occur in physical systems (e.g., construction, manufacturing, transportation), informational systems and biochemical-related systems.</li> </ul> <p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> <li>• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</li> <li>• Describe scale as a form of ratio and apply to a life situation.</li> </ul> <p>3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> <li>• Distinguish between a scientific theory and a belief.</li> <li>• Answer “What if” questions based on observation, inference or prior knowledge or experience.</li> <li>• Explain how skepticism about an accepted scientific explanation led to a new understanding.</li> <li>• Explain how new information may change existing theories and</li> </ul>	<p>Moon.</p> <p>Use a model of the relative positions of the sun, earth and moon to explain the phases of the moon.</p> <p>Use models of the Earth-Sun-Moon system to support explanations and predict the cyclic patterns of tides.</p> <p>Use models of the Earth-Sun-Moon system to support explanations and predict the cyclic patterns of eclipses.</p> <p>Use models of Earth's orientation and motion to explain how changes in intensity and duration of daily sunlight lead to seasons.</p> <p>Identify and explain the position and orientation of the Earth as it orbits the Sun.</p> <p>Construct and use scale models to describe the relationship of Earth to the rest of the solar system, the Milky Way Galaxy, and the universe.</p> <p><b>Vocabulary:</b></p>			
--	---	---	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>practice.</p> <p>3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> <li>• Measure materials using a variety of scales.</li> <li>• Describe relationships by making inferences and predictions.</li> <li>• Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment,</li> <li>• Design controlled experiments, recognize variables, and manipulate variables.</li> <li>• Interpret data, formulate models, design models, and produce solutions.</li> </ul> <p>3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> <li>• Generate questions about objects, organisms and/or events that can be answered through scientific investigations.</li> <li>• Evaluate the appropriateness of questions.</li> <li>• Design an investigation with limited variables to investigate a question.</li> </ul>	<p>altitude</p> <p>asteroid</p> <p>asteroid belt</p> <p>atmosphere</p> <p>Axis</p> <p>biosphere</p> <p>bird's-eye view</p> <p>comet</p> <p>complex crater</p> <p>core</p> <p>cosmos</p> <p>crater</p> <p>crescent</p> <p>crescent Moon</p> <p>crust</p> <p>Cyclical pattern</p> <p>diameter</p> <p>Earth</p> <p>ejecta</p> <p>elevation</p> <p>equator</p> <p>equinox</p> <p>first-quarter Moon</p> <p>flooded crater</p> <p>frame of reference</p> <p>full Moon</p> <p>Galaxy</p> <p>geosphere</p> <p>gibbous</p> <p>Gravity</p> <p>gravity</p> <p>highlands</p> <p>hydrosphere</p> <p>impact</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Conduct a two-part experiment.</li> <li>• Judge the significance of experimental information in answering the question.</li> <li>• Communicate appropriate conclusions from the experiment.</li> </ul> <p>3.2.7.D Know and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> <li>• Define different types of problems.</li> <li>• Define all aspects of the problem, necessary information and questions that must be answered.</li> <li>• Propose the best solution.</li> <li>• Design and propose alternative methods to achieve solutions.</li> <li>• Apply a solution.</li> <li>• Explain the results, present improvements, identify and infer the impacts of the solution.</li> </ul> <p>3.4.4.D Describe the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Recognize earth's place in the solar system.</li> <li>• Explain and illustrate the causes of seasonal changes.</li> <li>• Identify planets in our solar system and their general characteristics.</li> </ul>	<p>interacting latitude light-year (ly) Local Group location longitude lunar Lunar Eclipse Magellanic Cloud mantle mare (maria) meteor meteorite meteoroid Milky Way model Moon Neap tide nebula (nebulae) new Moon North Star Oort Cloud Orbit Orientation Pattern Penumbra Phase planet point of view Position ray regolith Revolution rille</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses.</li> </ul> <p>3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Compare various planets' characteristics.</li> <li>• Describe basic star types and identify the sun as a star type.</li> <li>• Describe and differentiate comets, asteroids and meteors.</li> <li>• Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.</li> <li>• Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month.</li> <li>• Identify equipment and instruments that explore the universe.</li> <li>• Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.</li> <li>• Identify and articulate space</li> </ul>	<p>Rotation rotation Satellite scaling factor Season simple crater solar solar angle Solar Eclipse solar system solstice Spring tide star subsystem system third-quarter Moon Tide System Tilt Umbra Universe Waning Waxing</p>			
--	--	---	--	--	--

Dunmore School District  
Curriculum Guide

	<p>program efforts to investigate possibilities of living in space and on other planets.</p> <p><b>PA Core Standards: Reading for Science and Technical Subjects, 6-12</b> 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.</p> <p><b>PA Core Standards: Writing for Science and Technical Subjects, 6-12</b> 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.</p>				
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
	PA Academic and Core Standards				
<b>The Planets, Solar System, and Life Cycle of Stars</b>  <b>How are the inner planets alike?</b>  <b>How are the outer planets alike?</b>  <b>What are some characteristics of planetary moons?</b>  <b>What other objects are part of the solar system?</b>  <b>What are the phases of a star's life cycle?</b>  <b>Ordinary baryonic matter makes up less than 5% of the Universe, so what is the rest?</b>  <b>The universe is composed of a variety of different</b>	<b>Anchor Descriptor:</b> S8.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).  S8.A.1.2 Identify and explain the impacts of applying scientific, environmental, or technological knowledge to address solutions to practical problems.  S8.A.1.3 Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.  S8.A.2.1 Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.  S8.A.2.2 Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.  S8.A.3.1 Explain the parts of a	<b>Eligible Content:</b> S8.A.2.2.1 Describe the appropriate use of instruments and scales to accurately and safely measure time, mass, distance, volume, or temperature under a variety of conditions.  S8.A.2.2.2 Apply appropriate measurement systems (e.g., time, mass, distance, volume, temperature) to record and interpret observations under varying conditions.  S8.A.2.2.3 Describe ways technology (e.g., microscope, telescope, micrometer, hydraulics, barometer) extends and enhances human abilities for specific purposes.  S8.C.1.1.2 Use characteristic physical or chemical properties to distinguish one substance from another (e.g., density, thermal expansion/contraction, freezing/melting points, streak test).	<b>Teacher made documents</b>  <b>Teacher prepared labs</b>  <b>Google Classroom</b> <b>Google Drive</b> <b>Google Form</b> <b>Google Sheets</b> <b>Lab Kit on Plantes</b> <b>Lab on spectroscopy</b> <b>Newsela website</b> <b>Prezi online slideshow</b> <b>Print out of notes for students</b> <b>Promethean Board</b> <b>Summative Assessment</b> <b>Vocabulary</b> <b>youTube class review videos</b>	<b>Teacher prepared tests, quizzes, etc.</b>  <b>Series available assessments online. (Optional)</b>	<b>11 Days</b>



**Dunmore School District  
Curriculum Guide**

<p><b>objects, which are organized into systems, each of which develops according to accepted physical processes and laws.</b></p>	<p>simple system, their roles, and their relationships to the system as a whole.</p> <p>S8.A.3.2 Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.</p> <p>S8.A.3.3 Describe repeated processes or recurring elements in natural, scientific, and technological patterns.</p> <p>S8.C.1.1 Explain concepts about the structure and properties (physical and chemical) of matter.</p> <p>S8.C.2.1 Describe energy sources, transfer of energy, or conversion of energy.</p> <p>S8.C.3.1 Describe the effect of multiple forces on the movement, speed, or direction of an object.</p> <p>S8.D.3.1 Explain the relationships between and among the objects of our solar system.</p> <p><b>PA Academic Standards: Science</b></p> <p>3.1.7.A Explain the parts of a simple system and their</p>	<p>S8.C.2.1.1 Distinguish among forms of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) and sources of energy (i.e., renewable and nonrenewable energy) radiation.</p> <p>S8.C.2.1.3 Describe how one form of energy (e.g., electrical, mechanical, chemical, light, sound, nuclear) can be converted into a different form of energy.</p> <p>S8.C.3.1.1 Describe forces acting on objects (e.g., friction, gravity, balanced versus unbalanced).</p> <p>S8.D.3.1.1 Describe patterns of earth's movements (i.e., rotation and revolution) in relation to the moon and sun (i.e., phases, eclipses, and tides)</p> <p>S8.D.3.1.2 Describe the role of gravity as the force that governs the movement of the solar system and universe.</p> <p>S8.D.3.1.3 Compare and</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>relationship to each other.</p> <ul style="list-style-type: none"> <li>• Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).</li> <li>• Explain the importance of order in a system.</li> <li>• Distinguish between system inputs, system processes and system outputs.</li> <li>• Distinguish between open loop and closed loop systems.</li> <li>• Apply systems analysis to solve problems.</li> </ul> <p>3.1.7.B Describe the use of models as an application of scientific or technological concepts.</p> <ul style="list-style-type: none"> <li>• Identify and describe different types of models and their functions.</li> <li>• Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms).</li> <li>• Explain systems by outlining a system's relevant parts and its purpose and/or designing a model that illustrates its function.</li> </ul> <p>3.1.7.C Identify patterns as repeated processes or recurring elements in science and technology.</p>	<p>contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).</p> <hr/> <p><b>Essential Knowledge/Skills:</b></p> <p><b>Earth and its solar system are part of the Milky Way Galaxy, which is one of many galaxies in the universe.</b></p> <p><b>Our solar system is a collection of objects, including planets, their moons, and asteroids that are held in orbit around the Sun by its gravitational pull on them.</b></p> <p>Construct and use scale models to describe the relationship of Earth to the rest of the solar system, the Milky Way Galaxy, and the universe.</p> <p>Construct and use scale models of the solar system to support the explanation of the role of gravity in the motions of the planets of the observed system.</p>			
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Identify different forms of patterns and use them to group and classify specific objects.</li> <li>• Identify repeating structure patterns.</li> <li>• Identify and describe patterns that occur in physical systems (e.g., construction, manufacturing, transportation), informational systems and biochemical-related systems.</li> </ul> <p>3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> <li>• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.</li> <li>• Describe scale as a form of ratio and apply to a life situation.</li> </ul> <p>3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> <li>• Distinguish between a scientific theory and a belief.</li> <li>• Answer “What if” questions based on observation, inference or prior knowledge or experience.</li> <li>• Explain how skepticism about an accepted scientific explanation led to a new understanding.</li> <li>• Explain how new information may change existing theories and</li> </ul>	<p>Analyze and interpret data to determine scale properties (i.e. distance from sun, diameter, etc.) of objects in the solar system.</p> <p><b>Vocabulary:</b>  absorption line  accretion  anthropocene  Asteroids  astronomical unit (AU)  atmosphere  barycenter  big bang theory  binary star  bird’s-eye view  black hole  Doppler shift  dwarf planet  ecosystem  electromagnetic spectrum  emission line  emit  exoplanet  fossil fuel  fracking  Galaxy  Gravity  greenhouse gas  Kuiper Belt  light signature  light-year (ly)  Local Group</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>practice.</p> <p>3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> <li>• Measure materials using a variety of scales.</li> <li>• Describe relationships by making inferences and predictions.</li> <li>• Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment,</li> <li>• Design controlled experiments, recognize variables, and manipulate variables.</li> <li>• Interpret data, formulate models, design models, and produce solutions.</li> </ul> <p>3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> <li>• Generate questions about objects, organisms and/or events that can be answered through scientific investigations.</li> <li>• Evaluate the appropriateness of questions.</li> <li>• Design an investigation with limited variables to investigate a question.</li> </ul>	<p>Magellanic Cloud meteorite Milky Way Moon nebula (nebulae) nonrenewable Orbit orbital period orbital radius orrery planetesimal plutoid radiometer red giant renewable Satellite Satellite Solar system Solar system spectroscope spectrum star cluster supernova transit Universe visible light wavelength white dwarf wobble method</p>			
--	---	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Conduct a two-part experiment.</li> <li>• Judge the significance of experimental information in answering the question.</li> <li>• Communicate appropriate conclusions from the experiment.</li> </ul> <p>3.2.7.D Know and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> <li>• Define different types of problems.</li> <li>• Define all aspects of the problem, necessary information and questions that must be answered.</li> <li>• Propose the best solution.</li> <li>• Design and propose alternative methods to achieve solutions.</li> <li>• Apply a solution.</li> <li>• Explain the results, present improvements, identify and infer the impacts of the solution.</li> </ul> <p>3.4.4.D Describe the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Recognize earth's place in the solar system.</li> <li>• Explain and illustrate the causes of seasonal changes.</li> <li>• Identify planets in our solar system and their general characteristics.</li> </ul>				
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<ul style="list-style-type: none"> <li>• Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses.</li> </ul> <p>3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> <li>• Compare various planets' characteristics.</li> <li>• Describe basic star types and identify the sun as a star type.</li> <li>• Describe and differentiate comets, asteroids and meteors.</li> <li>• Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.</li> <li>• Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month.</li> <li>• Identify equipment and instruments that explore the universe.</li> <li>• Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.</li> <li>• Identify and articulate space</li> </ul>				
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

	<p>program efforts to investigate possibilities of living in space and on other planets.</p> <p><b>PA Core Standards: Reading for Science and Technical Subjects, 6-12</b> 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.</p> <p><b>PA Core Standards: Writing for Science and Technical Subjects, 6-12</b> 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.</p>				
--	--	--	--	--	--

**Dunmore School District  
Curriculum Guide**

General Topic	Anchor Descriptor	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Review and Final Exam					4 Days



**Dunmore School District  
Curriculum Guide**

**PA Core Standards:**

**Reading for Science and Technical Subjects, 6-12**

**3.5 Reading Informational Text**

Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.

**Grades 6-8**

**CC.3.5.6-8.A.**

Cite specific textual evidence to support analysis of science and technical texts.

**CC.3.5.6-8.B.**

Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

**CC.3.5.6-8.C.**

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**CC.3.5.6-8.D.**

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 6–8 texts and topics.

**CC.3.5.6-8.E.**

Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

**CC.3.5.6-8.F.**

Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

**CC.3.5.6-8.G.**

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

**CC.3.5.6-8.H.**

Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

**Dunmore School District  
Curriculum Guide**

CC.3.5.6-8.I.

Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

CC.3.5.6-8.J.

By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

**Dunmore School District  
Curriculum Guide**

**PA Core Standards:**

**Writing for Science and Technical Subjects, 6-12**

**3.6 Writing**

Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.

**Grades 6-8**

**CC.3.6.6-8.A.**

Write arguments focused on discipline-specific content.

- Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
- Use words, phrases, and clauses to create cohesion and clarify the relationships among claims), counterclaims, reasons, and evidence.
- Establish and maintain a formal style.
- Provide a concluding statement or section that follows from and supports the argument presented.

**CC.3.6.6-8.B. \***

Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- Use precise language and domain-specific vocabulary to inform about or explain the topic.
- Establish and maintain a formal style and objective tone.
- Provide a concluding statement or section that follows from and supports the information or explanation presented.

**CC.3.6.6-8.C.**

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

**CC.3.6.6-8.D.**

With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

**Dunmore School District  
Curriculum Guide**

CC.3.6.6-8.E.

Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

CC.3.6.6-8.F.

Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

CC.3.6.6-8.G.

Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

CC.3.6.6-8.H.

Draw evidence from informational texts to support analysis reflection, and research.

CC.3.6.6-8.J.I.

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.

**Dunmore School District  
Curriculum Guide**

Appendix: A			
IEP Enhancements			
General Topic:	Specially designed instruction:	Additional Vocabulary:	Assessments/Suggested Time:
<p>Earth as a System</p> <p>What is Earth system science?</p> <p>What are the Earth system's four spheres, and how do they affect one another?</p> <p>What are cycles and how do they work?</p> <p>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</p> <p>The Earth's processes affect and are affected by human activities.</p>	<ul style="list-style-type: none"> <li>• Preferential Seating</li> <li>• Directions read aloud</li> <li>• Additional textbook sent home</li> <li>• Extra time to complete assignments</li> <li>• Additional textbook sent home if used</li> <li>• Enlarged Text</li> <li>• Use of Closed Caption</li> <li>• Manipulatives</li> <li>• Visual Aids</li> <li>• Notes Provided</li> <li>• Class review before tests and quizzes</li> <li>• Use of Calculator</li> <li>• Use of Computer</li> <li>• Modified assignments (examples but not limited to: reduction on questions/answers, larger print on typed worksheets)</li> <li>• Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material</li> </ul>		<p>Assessments:</p> <ul style="list-style-type: none"> <li>• Extended time to complete</li> <li>• Adapted assessments in accordance with student's IEP</li> </ul> <p>Suggested Time: 15 days as specified in the curriculum and additional time as needed per individual student</p>
<p>Resources and the Environment</p> <p>Nonrenewable Energy Sources</p> <p>Renewable Energy Sources</p> <p>The Earth's processes affect and are affected by human activities.</p> <p>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</p>	<ul style="list-style-type: none"> <li>• Preferential Seating</li> <li>• Directions read aloud</li> <li>• Additional textbook sent home</li> <li>• Extra time to complete assignments</li> <li>• Additional textbook sent home if used</li> <li>• Enlarged Text</li> <li>• Use of Closed Caption</li> <li>• Manipulatives</li> <li>• Visual Aids</li> <li>• Notes Provided</li> <li>• Class review before tests and quizzes</li> <li>• Use of Calculator</li> <li>• Use of Computer</li> <li>• Modified assignments (examples but not limited to: reduction on questions/answers, larger print on typed worksheets)</li> <li>• Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material</li> </ul>		<p>Assessments:</p> <ul style="list-style-type: none"> <li>• Extended time to complete</li> <li>• Adapted assessments in accordance with student's IEP</li> </ul> <p>Suggested Time: 15 days as specified in the curriculum and additional time as needed per individual student</p>

**Dunmore School District  
Curriculum Guide**

General Topic:	Specially designed instruction:	Additional Vocabulary:	Assessments/Suggested Time:
<p>Earth History</p> <p>Minerals</p> <p>Earth is a Rock</p> <p>Weathering and Erosion</p> <p>Deposition</p> <p>Fossils and Past Environments</p> <p>Rock Cycle</p> <p>Plate Tectonics, Volcanoes, and Earthquakes</p> <p>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</p>	<ul style="list-style-type: none"> <li>• Preferential Seating</li> <li>• Directions read aloud</li> <li>• Additional textbook sent home</li> <li>• Extra time to complete assignments</li> <li>• Additional textbook sent home if used</li> <li>• Enlarged Text</li> <li>• Use of Closed Caption</li> <li>• Manipulatives</li> <li>• Visual Aids</li> <li>• Notes Provided</li> <li>• Class review before tests and quizzes</li> <li>• Use of Calculator</li> <li>• Use of Computer</li> <li>• Modified assignments (examples but not limited to: reduction on questions/answers, larger print on typed worksheets)</li> <li>• Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material</li> </ul>		<p>Assessments:</p> <ul style="list-style-type: none"> <li>• Extended time to complete</li> <li>• Adapted assessments in accordance with student's IEP</li> </ul> <p>Suggested Time:</p> <p>58 days as specified in the curriculum and additional time as needed per individual student</p>

**Dunmore School District  
Curriculum Guide**

General Topic:	Specially designed instruction:	Additional Vocabulary:	Assessments/Suggested Time:
<p>Weather and Water</p> <p>Where's the Air?</p> <p>Air Pressure and Wind</p> <p>Convection</p> <p>Radiation</p> <p>Conduction</p> <p>Air Flow</p> <p>Water in the Air</p> <p>Oceans</p> <p>Human Caused Climate Change</p> <p>Meteorology</p> <p>The universe is composed of a variety of different objects which are organized into systems, each of which develops according to accepted physical processes and laws.</p> <p>The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.</p> <p>The Earth's processes affect and are affected by human activities.</p>	<ul style="list-style-type: none"> <li>• Preferential seating</li> <li>• Directions read aloud</li> <li>• Additional textbook sent home</li> <li>• Extra time to complete assignments</li> <li>• Additional textbook sent home if used</li> <li>• Enlarged Text</li> <li>• Use of Closed Caption</li> <li>• Manipulatives</li> <li>• Visual Aids</li> <li>• Notes Provided</li> <li>• Class review before tests and quizzes</li> <li>• Use of calculator</li> <li>• Use of computer</li> <li>• Modified assignments (examples but not limited to: reduction on questions/answers, larger print on typed worksheets)</li> <li>• Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material</li> </ul>		<p>Assessments:</p> <ul style="list-style-type: none"> <li>• Extended time to complete</li> <li>• Adapted assessments in accordance with student's IEP</li> </ul> <p>Suggested Time:</p> <p>63 days as specified in the curriculum and additional time as needed per individual student</p>

**Dunmore School District  
Curriculum Guide**

General Topic:	Specially designed instruction:	Additional Vocabulary:	Assessments/Suggested Time:
<p>Origins the Sun, the Solar System, and our Moon</p> <p>What is our Cosmic Address?</p> <p>The Big Bang Theory</p> <p>Origins of the Sun</p> <p>How have observations made by scientists in the past contributed to our understanding of the Sun and the Universe?</p> <p>What is the Sun's structure and source of energy?</p> <p>How did the Moon form?</p> <p>What are the Moon's properties?</p> <p>The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws.</p>	<ul style="list-style-type: none"> <li>• Preferential seating</li> <li>• Directions read aloud</li> <li>• Additional textbook sent home</li> <li>• Extra time to complete assignments</li> <li>• Additional textbook sent home if used</li> <li>• Enlarged Text</li> <li>• Use of Closed Caption</li> <li>• Manipulatives</li> <li>• Visual Aids</li> <li>• Notes Provided</li> <li>• Class review before tests and quizzes</li> <li>• Use of calculator</li> <li>• Use of computer</li> <li>• Modified assignments (examples but not limited to: reduction on questions/answers, larger print on typed worksheets)</li> <li>• Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material</li> </ul>		<p>Assessments:</p> <ul style="list-style-type: none"> <li>• Extended time to complete</li> <li>• Adapted assessments in accordance with student's IEP</li> </ul> <p>Suggested Time:</p> <p>14 days as specified in the curriculum and additional time as needed per individual student</p>



**Dunmore School District  
Curriculum Guide**

General Topic:	Specially designed instruction:	Additional Vocabulary:	Assessments/Suggested Time:
<p>The Planets, Solar System, and Life Cycle of Stars</p> <p>How are the inner planets alike?</p> <p>How are the outer planets alike?</p> <p>What are some characteristics of planetary moons?</p> <p>What other objects are part of the solar system?</p> <p>What are the phases of a star's life cycle?</p> <p>Ordinary baryonic matter makes up less than 5% of the Universe, so what is the rest?</p> <p>The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws.</p>	<ul style="list-style-type: none"> <li>• Preferential seating</li> <li>• Directions read aloud</li> <li>• Additional textbook sent home</li> <li>• Extra time to complete assignments</li> <li>• Additional textbook sent home if used</li> <li>• Enlarged Text</li> <li>• Use of Closed Caption</li> <li>• Manipulatives</li> <li>• Visual Aids</li> <li>• Notes Provided</li> <li>• Class review before tests and quizzes</li> <li>• Use of Calculator</li> <li>• Use of Computer</li> <li>• Modified assignments (examples but not limited to: reduction on questions/answers, larger print on typed worksheets)</li> <li>• Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material</li> </ul>		<p>Assessments:</p> <ul style="list-style-type: none"> <li>• Extended time to complete</li> <li>• Adapted assessments in accordance with student's IEP</li> </ul> <p>Suggested Time: 11 days as specified in the curriculum and additional time as needed per individual student</p>
Review and Final Exam	As listed as above		