

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> Weather and Climate</p>	<p><input checked="" type="checkbox"/> Essential <input type="checkbox"/> Important <input type="checkbox"/> Compact</p>
<p><u>Big Idea:</u> Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things.</p>	
<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u></p> <p>3.3.6-8.J - Collect data to provide evidence for how the motion and complex interactions of air masses result in changes in weather conditions.</p> <p>3.3.6-8.O - Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u> What regulates weather and climate?</p>	<p><u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u></p> <ul style="list-style-type: none"> ● Students will know that... <p>Cause and Effect Cause and effect relationships may be used to predict phenomena in natural or designed systems.</p> <p>Stability and Change - Stability might be disturbed either by sudden events or gradual changes that accumulate over time</p>

<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u></p> <p>The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.</p> <p>Because these patterns are so complex, weather can only be predicted probabilistically.</p> <p>Human activities, such as the release of greenhouse gasses from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.</p>	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> • Students will be able to... <p><u>Planning and Carrying Out Investigations:</u> Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions.</p>
<p><u>Vocabulary:</u></p> <p>High/low pressure Temperature Pressure Humidity Precipitation Wind Air mass Human activities (e.g.: fossil fuel combustion, cement production, and agricultural activity) Natural processes (e.g.: solar radiation or volcanic activity) Greenhouse gas Carbon dioxide</p>	<p><u>Core Resources:</u></p> <p>Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>

<p><u>Common Assessment(s):</u></p> <p>Unit Quizzes</p> <p>Unit Tests</p> <p>Unit Projects</p> <p>Unit Labs</p>	<p><u>Supplemental Resources:</u></p> <p>Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>
--	--

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> Natural Hazards</p>	<p><input checked="" type="checkbox"/> Essential <input type="checkbox"/> Important <input type="checkbox"/> Compact</p>
<p><u>Big Idea:</u> Natural processes can cause sudden or gradual changes to Earth's systems, some of which may adversely affect humans.</p>	
<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u> 3.3.6-8.L - Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u> How do natural hazards affect individuals and societies?</p>	<p><u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u></p> <ul style="list-style-type: none"> • Students will know that... <p>Patterns</p> <p>Graphs, charts, and images can be used to identify patterns in data.</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Influence of Science, Engineering, and Technology on Society and the Natural World</p>

	<p>The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time</p>
<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u></p> <p>Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.</p>	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> • Students will be able to... <p><u>Analyzing and Interpreting Data:</u> Analyze and interpret data to determine similarities and differences in findings.</p>
<p><u>Vocabulary:</u></p> <p>Ecosystem Natural Hazards Tornado Hurricane Tsunami</p>	<p><u>Core Resources:</u></p> <p>Unit Notes Slides</p> <p>Unit Notes</p> <p>Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u></p> <p>Unit Quizzes</p> <p>Unit Tests</p> <p>Unit Projects</p> <p>Unit Labs</p>	<p><u>Supplemental Resources:</u></p> <p>Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> The History of Planet Earth</p>	<p><input checked="" type="checkbox"/> Essential <input type="checkbox"/> Important <input type="checkbox"/> Compact</p>
<p><u>Big Idea:</u> We can infer Earth’s planetary history by features we observe today.</p>	
<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u></p> <p>3.3.6-8.D - Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.</p> <p>3.3.6-8.E - Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <p>How do people reconstruct and date events in Earth’s planetary history?</p>	<p><u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u></p> <ul style="list-style-type: none"> • Students will know that... <p>Scale, Proportion, and Quantity Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.</p>
<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u></p> <p>The geologic time scale interpreted from rock strata provides a way to organize Earth’s history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.</p>	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> • Students will be able to... <p>Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students’ own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.</p>

<p><u>Vocabulary:</u> Geologic Time Scale Strata Relative Age Superposition Unconformity Uniformitarianism Geosphere Crust Mantle Lithosphere Asthenosphere Convection Inner Core Outer Core Convergent Boundary Divergent Boundary Transform Boundary Subduction Zone</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs</p>	<p><u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> Plate Tectonics and Large-Scale System Interactions</p>	<p><u> X </u> Essential <u> </u> Important <u> </u> Compact</p>
<p><u>Big Idea:</u> Plate tectonics explains the past and current movements and features of the rocks at Earth’s surface.</p>	

<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u></p> <p>3.3.6-8.G - Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions.</p> <p>3.3.6-8.L - Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <p>Why do the continents move, and what causes earthquakes and volcanoes?</p> <p>How do natural hazards affect individuals and societies?</p>	<p><u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u></p> <ul style="list-style-type: none"> ● Students will know that... <p>Patterns</p> <p>Patterns in rates of change and other numerical relationships can provide information about natural systems.</p> <p>Graphs, charts, and images can be used to identify patterns in data.</p>
<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u></p> <ul style="list-style-type: none"> ● Tectonic processes continually generate new ocean seafloor at ridges and destroy old seafloor at trenches. (secondary) ● Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. 	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> ● Students will be able to... <p><u>Analyzing and Interpreting Data:</u> Analyze and interpret data to provide evidence for phenomena.</p> <p><u>Connections to Nature of Science:</u> Science findings are frequently revised and/or reinterpreted based on new evidence.</p>

<p><u>Vocabulary:</u> Fossils Oceanic Ridge Rift Valley Trench Pangea Seafloor Spreading Continental Drift Theory Plate Tectonics Convergent Boundary Divergent Boundary</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs</p>	<p><u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> Natural Resources</p>	<p><input checked="" type="checkbox"/> Essential <input type="checkbox"/> Important <input type="checkbox"/> Compact</p>
<p><u>Big Idea:</u> All materials, energy, and fuels that humans use are derived from natural sources, some of which are renewable over time and others are not.</p>	
<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u> 3.3.6-8.K - Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>

<p>3.4.6-8.B - Analyze and interpret data about how different societies (economic and social systems) and cultures use and manage natural resources differently.</p>	
<p>Essential Questions:</p> <p>How do Earth’s surface processes and human activities affect each other?</p> <p>How do humans depend on Earth’s resources?</p>	<p>Understandings (CCCs - Cross-cutting Concepts [themes]):</p> <ul style="list-style-type: none"> Students will know that... <p>Cause and Effect</p> <p>Cause and effect relationships may be used to predict phenomena in natural or designed systems.</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>All human activity draws on natural resources and has both short and long- term consequences, positive as well as negative, for the health of people and the natural environment.</p>
<p>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</p> <p>Earth’s land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.</p> <p>Humans depend on Earth’s land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.</p> <p>Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of</p>	<p>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</p> <ul style="list-style-type: none"> Students will be able to... <p>Constructing Explanations and Designing Solutions: Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students’ own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.</p> <p>Analyzing and Interpreting Data</p> <p>Analyze and interpret data to determine similarities and differences in findings.</p>

<p>other species. But changes to Earth’s environments can have different impacts (negative and positive) for different living things.</p>	
<p><u>Vocabulary:</u> Per-capita consumption Nonrenewable resources Renewable resources Earth’s resources (e.g. minerals, energy, groundwater, etc.) Geologic processes (e.g., volcanic activity, sedimentary processes)</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs</p>	<p><u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> Earth’s Materials and Systems</p>	<p><u>__X__</u> Essential <u> </u> Important <u> </u> Compact</p>
<p><u>Big Idea:</u> Changes we observe on Earth are the result of energy flowing and matter cycling between interconnected systems (the geosphere, hydrosphere, atmosphere, and biosphere).</p>	
<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u></p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>

<p>3.3.6-8.F - Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.</p>	
<p>Essential Questions: How and why is Earth constantly changing? How do Earth's major systems interact?</p>	<p>Understandings (CCCs - Cross-cutting Concepts [themes]):</p> <ul style="list-style-type: none"> Students will know that... <p>Scale Proportion and Quantity</p> <p>Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.</p> <p>Stability and Change</p> <p>Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale.</p>
<p>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</p> <p>The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.</p> <p>Water's movements— both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.</p>	<p>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</p> <ul style="list-style-type: none"> Students will be able to... <p><u>Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories:</u></p> <p>-Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe nature operate today as they did in the past and will continue to do so in the future.</p>

<p>All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms</p>	
<p><u>Vocabulary:</u> Weathering Erosion Deposition Sediment Geoscience processes (eg: earthquakes, volcanoes, meteor impacts, etc.) Chemical/ physical changes Melting Crystallization Weathering Deformation Sedimentation Erosion Geosphere Igneous rock Metamorphic rock Sedimentary rock Rock cycle</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs</p>	<p><u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

Grade, Subject/Course: 6th Grade Earth and Space Science	
Unit: The Roles of Water in Earth’s Surface Processes	<u> X </u> Essential <u> </u> Important <u> </u> Compact
<p>Big Idea: Water’s presence and properties impact Earth’s ecosystems and surface features.</p>	
<p>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</p> <p>3.3.6-8.H - Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.</p> <p>3.3.6-8.I - Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates</p> <p>3.4.6-8.C - Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve.</p>	<p>Interdisciplinary Standards (if applicable):</p>
<p>Essential Questions: How do the properties and movements of water shape Earth’s surface and affect its systems?</p>	<p>Understandings (CCCs - Cross-cutting Concepts [themes]):</p> <ul style="list-style-type: none"> ● Students will know that... <p>Energy and Matter Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.</p> <p>Systems and System Models Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems.</p> <p>Structure and Function</p> <ul style="list-style-type: none"> ● Structures can be designed to serve particular functions.

Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):

Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land.

Global movements of water and its changes in form are propelled by sunlight and gravity.

Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents.

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, all of which can affect oceanic and atmospheric flow patterns.

The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents.

Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.

In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.

Ecosystems are dynamic in nature; their characteristics can vary over time. disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations.

Do/Skills (SEPs - Science and Engineering Practices [what they do]):

- Students will be able to...

Developing and Using Models: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Asking Questions: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

<p><u>Vocabulary:</u> Hydrologic cycle Transpiration Respiration Glaciers Aquifers Latitude Altitude Coriolis effect Thermal energy Radiation Input Output Salinity Density Climate</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs</p>	<p><u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

<p><u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science</p>	
<p><u>Unit:</u> Human Impact on Earth Systems</p>	<p><u> X </u> Essential <u> </u> Important <u> </u> Compact</p>
<p><u>Big Idea:</u> Human activities in agriculture, industry, and everyday life has an impact on the land, rivers, ocean, and air.</p>	

<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u></p> <p>3.3.6-8.M - Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.</p> <p>3.3.6-8.N - Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth's systems.</p> <p>3.4.6-8.G - Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.</p> <p>3.4.6-8.H - Design a solution to an environmental issue in which individuals and societies can engage as stewards to the environment.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <p>How do humans change the planet?</p>	<p><u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u></p> <ul style="list-style-type: none"> • Students will know that... <p>Cause and Effect</p> <p>Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation.</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time.</p> <p>Cause and Effect</p> <p>Cause and effect relationships may be used to predict phenomena in natural or designed systems.</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>All human activity draws on natural resources and has both short- term</p>

	<p>consequences, positive as well as negative, for the health of people and the natural environment.</p> <p>Connections to Nature of Science</p> <p>Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes.</p> <p>Stability and Change</p> <p>Small changes in one part of a system might cause large changes in another part.</p>
<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u></p> <p>Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth’s environments can have different impacts (negative and positive) for different living things. Typically as human populations and per- capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.</p> <p>Typically as human populations and per- capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.</p> <p>There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.</p>	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> • Students will be able to... <p><u>Constructing Explanations and Designing Solutions:</u> Apply scientific principles to design an object, tool, process or system.</p> <p>Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.</p> <p><u>Obtaining, Evaluating, and Communicating Information</u> Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or now supported by evidence.</p>

<p><u>Vocabulary:</u> Water usage Land usage Pollution Per-capita consumption Population Natural resources</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs</p>	<p><u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>

<p><u>Grade, Subject/Course:</u> Sixth Grade Earth and Space Science</p>	
<p><u>Unit:</u> The Universe and Its Stars</p>	<p><input checked="" type="checkbox"/> Essential <input type="checkbox"/> Important <input type="checkbox"/> Compact</p>
<p><u>Big Idea:</u> We can infer information about stars based on observations we make from Earth.</p>	
<p><u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u> 3.3.6-8.A Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. 3.3.6-8.B Develop and use a model to describe the role of gravity in the motion within galaxies and the solar system.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What is the universe, and what is Earth’s place in it? ● What is the universe, and what goes on in stars? 	<p><u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u></p> <ul style="list-style-type: none"> ● Patterns Patterns can be used to identify cause-and-effect relationships. ● Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems Science assumes that objects and events in natural systems occur in consistent

	<p>patterns that are understandable through measurement and observation.</p> <ul style="list-style-type: none"> • Systems and System Models Models can be used to represent systems and their interactions.
<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u></p> <ul style="list-style-type: none"> • Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. • This model of the solar system can explain eclipses of the sun and the moon. Earth’s spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year. • Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. • The solar system appears to have formed from a disk of dust and gas, drawn together by gravity 	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> • Students will be able to... <p><u>Developing and Using Models:</u> Develop and use a model to describe phenomena.</p>
<p><u>Vocabulary:</u> Astronomy Satellite Milky way Galaxy expansion Big bang Composition Spectra Radiation Solar energy Reflection Illuminate Orbital plane Solar System Universe Orbit</p>	<p><u>Core Resources:</u> Unit Notes Slides Unit Notes Lab Equipment and Supplies</p>

Gravity Axis Cyclical Pattern Revolution Rotation	
<u>Common Assessment(s):</u> Unit Quizzes Unit Tests Unit Projects Unit Labs	<u>Supplemental Resources:</u> Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)

<u>Grade, Subject/Course:</u> 6th Grade Earth and Space Science	
<u>Unit:</u> Earth and the Solar System	<input checked="" type="checkbox"/> Essential <input type="checkbox"/> Important <input type="checkbox"/> Compact
<u>Big Idea:</u> Observations of the sky can be explained by predictable patterns of the movement of Earth, moon, sun and planets.	
<u>PA Core Content Standards/Anchors (or National Standards or STEELS Standards):</u> 3.3.6-8.C Analyze and interpret data to determine scale properties of objects in the solar system.	<u>Interdisciplinary Standards (if applicable):</u>
<u>Essential Questions:</u> What are the predictable patterns caused by Earth’s movement in the solar system?	<u>Understandings (CCCs - Cross-cutting Concepts [themes]):</u> <ul style="list-style-type: none"> ● Students will know that... Scale, Proportion, and Quantity Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems.

<p><u>Knowledge (DCIs - Disciplinary Core Ideas [what they will know]):</u> The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.</p>	<p><u>Do/Skills (SEPs - Science and Engineering Practices [what they do]):</u></p> <ul style="list-style-type: none"> • Students will be able to... <p><u>Analyzing and Interpreting Data:</u> Analyze and interpret data to determine similarities and differences in findings.</p>
<p><u>Vocabulary:</u> Surface Feature Orbital Radii Diameter Distance Composition Scale Ratio Proportion</p>	<p><u>Core Resources:</u></p> <p>Unit Notes Slides</p> <p>Unit Notes</p> <p>Lab Equipment and Supplies</p>
<p><u>Common Assessment(s):</u></p> <p>Unit Quizzes</p> <p>Unit Tests</p> <p>Unit Projects</p> <p>Unit Labs</p>	<p><u>Supplemental Resources:</u></p> <p>Interactive Online Site (e.g., GIZMO, Edpuzzle, PBS, Discovery Ed, Quizlet, Gimkit, Blooket, Quizziz, Nearpod, Peardeck)</p>