

PHASE IV EARTH SCIENCE CURRICULUM

Course 18000

Phase IV Science is a science program where seventh and eighth grade students will engage in learning from the three disciplines of science: earth science, life science, and physical science. The program engages students in three learning pathways: reading/writing, hands-on activities, and online content and activities. The Earth Science component of this series covers topics like: rocks and minerals, volcanos, earthquakes, plate tectonics, weathering and erosion, water, geologic time, energy resources, atmosphere, weather, climate, and the solar system.

PHASE IV EARTH SCIENCE OUTLINE:

Goals	Skills	Summative Assessments	Time Frame	Main Resources
<ul style="list-style-type: none">• Identify the main types of landforms.• Describe the rock cycle, including the three major types of rocks with characteristics and examples of each type.• Explain the theory of plate tectonics including types of boundaries and the features associated with each.• Explain how wind and water both cause erosion and deposition.• Describe the major events in the different geologic eras.• Describe the major features and processes that occur in both fresh and salt bodies of water.• Explain how air masses and fronts cause different types of weather.• Identify the factors that influence climate and describe how different combinations of these factors affect the environment.• Describe the different bodies of our solar system and the universe including their characteristics.	<ul style="list-style-type: none">• Use models to explain scientific concepts and principles.• Recognize and describe reoccurring patterns in the world around us.• Use tools and equipment to make observations and gather scientific data.	End of Chapter Tests	1-year	Pearson: Interactive Science-Earth Science

PHASE IV EARTH SCIENCE MAP:

TIME FRAME	BIG IDEAS	CONCEPTS	ESSENTIAL QUESTIONS	STANDARDS	OBJECTIVES	DIFFERENTIATION	ASSESSMENT
Chapter 1- Introducing Earth (2-3 Weeks)	<p>Lesson 1</p> <ul style="list-style-type: none"> The Earth system has four main spheres: the atmosphere, hydrosphere, and biosphere. Constructive forces shape the land's surface by building up mountains and other landmasses. Destructive forces destroy and wear away landmasses. <p>Lesson 2</p> <ul style="list-style-type: none"> Geologists have use two main types of evidence to learn about Earth's interior; direct evidence from rock samples and indirect evidence from seismic waves. The three main layers of Earth are the crust, mantle, and core. <p>Lesson 3</p> <ul style="list-style-type: none"> There are three types of heat transfer; radiation, convection, and conduction. <p>Lesson 4</p> <ul style="list-style-type: none"> The three major types of landforms are 	<ol style="list-style-type: none"> The Earth System Earth's Interior Convection and the Mantle Exploring Earth's Surface Models of Earth Topographic Maps 	<p>Lesson 1- The Earth System</p> <ul style="list-style-type: none"> Identify and describe the main components of the Earth system. Summarize the effects of constructive and destructive forces. <p>Lesson 2- Earth's Interior</p> <ul style="list-style-type: none"> Explain how geologists learn about Earth's inner structures. Identify the characteristics of Earth's crust, mantle, and core, and describe how temperature and pressure change inside Earth. <p>Lesson 3- Convection and the Mantle</p> <ul style="list-style-type: none"> Explain how heat is transferred. Describe convection currents in Earth's mantle. <p>Lesson 4- Exploring Earth's Surface</p> <ul style="list-style-type: none"> Explain what the topography 	<p>3.3.7.A1 Define basic features of the rock cycle.</p> <p>Describe the layers of the earth.</p> <p>Differentiate among the mechanisms by which heat is transferred through the Earth's system.</p> <p>3.3.8.A3 Explain how matter on earth is conserved throughout the geological processes over time.</p> <p>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).</p>	<p>Lesson 1- The Earth System</p> <ul style="list-style-type: none"> Identify and describe the main components of the Earth system. Summarize the effects of constructive and destructive forces. <p>Lesson 2- Earth's Interior</p> <ul style="list-style-type: none"> Explain how geologists learn about Earth's inner structures. Identify the characteristics of Earth's crust, mantle, and core, and describe how temperature and pressure change inside Earth. <p>Lesson 3- Convection and the Mantle</p> <ul style="list-style-type: none"> Explain how heat is transferred. Describe convection currents in Earth's mantle. <p>Lesson 4- Exploring Earth's Surface</p> <ul style="list-style-type: none"> Explain what the topography of an area includes. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>plains, mountains, and plateaus.</p> <p>Lesson 5</p> <ul style="list-style-type: none"> • Maps and globes are drawn to scale and use symbols to represent features on Earth's surface. • Distances on earth are measured in degrees from the equator and the prime meridian. • Lesson 6 • Mapmakers use contour lines to show elevation, relief, and slope on topographic maps. 		<p>of an area includes.</p> <ul style="list-style-type: none"> • Identify the main types of landforms. <p>Lesson 5- Models of Earth</p> <ul style="list-style-type: none"> • Explain how maps and globes represent Earth's surface. • Explain how distances on Earth can be measured using degrees. • Identify latitude and longitude as reference lines that help locate points on Earth. • Example 2\ • Example 4 		<ul style="list-style-type: none"> • Identify the main types of landforms. <p>Lesson 5- Models of Earth</p> <ul style="list-style-type: none"> • How do maps and globes represent Earth? • How is distance measured in degrees? • What are latitude and longitude. 		
<p>Chapter 2 Minerals and Rocks (2-3 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> • A mineral is a naturally occurring solid that can form by inorganic processes and that has a crystal structure and a definite chemical composition. <p>Lesson 2</p> <ul style="list-style-type: none"> • To study a rock sample, geologists observe the rock's mineral composition, color, and texture. • Geologists have classified rocks into three major groups: igneous, 	<ol style="list-style-type: none"> 1. Properties of Minerals 2. Classifying Rocks 3. Igneous Rocks 4. Sedimentary Rocks 5. Metamorphic Rocks 6. The Rock Cycle 	<p>Lesson 1</p> <ul style="list-style-type: none"> • What is a mineral? • How are minerals identified? <p>Lesson 2</p> <ul style="list-style-type: none"> • How do geologists classify rocks? <p>Lesson 3</p> <ul style="list-style-type: none"> • How do geologists classify igneous rocks? • How are igneous rocks used? <p>Lesson 4</p> <ul style="list-style-type: none"> • How do sedimentary rocks form? • What are the three major types of 	<p>3.3.7.A1 Define basic features of the rock cycle.</p> <p>Describe the layers of the earth.</p> <p>Differentiate among the mechanisms by which heat is transferred through the Earth's system.</p> <p>3.3.7.A2 Explain land use in relation to soil type and topography.</p> <p>3.3.7.A3 Explain and give examples of how physical evidence, such as fossils and surface features of glaciation support theories that the Earth has evolved over geologic time.</p> <p>Compare geologic processes over time.</p> <p>3.3.A Earth Structure, Processes and Cycles</p> <p>S7.D.1.1.2</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> • Define a mineral. • Explain how minerals are identified. • Explain how minerals form and where mineral sources are located. <p>Lesson 2</p> <ul style="list-style-type: none"> • List the characteristics used to identify rocks, and identify the three major groups of rocks. <p>Lesson 3</p> <ul style="list-style-type: none"> • Identify the characteristics used to identify igneous rocks. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>metamorphic and sedimentary</p> <ul style="list-style-type: none"> Lesson 3 Igneous rocks are classified by their origin, texture, and mineral composition. <p>Lesson 4</p> <ul style="list-style-type: none"> Most sedimentary rocks are formed through a sequence of processes. <p>Lesson 5</p> <ul style="list-style-type: none"> Any rock that forms from another rock as a result of changes in heat or pressure is a metamorphic rock. <p>Lesson 6</p> <ul style="list-style-type: none"> The rock cycle is a series of processes that occur on Earth's surface and in the crust and mantle that slowly change rocks from one kind to another. 		<p>sedimentary rocks?</p> <ul style="list-style-type: none"> How are sedimentary rocks used? <p>Lesson 5</p> <ul style="list-style-type: none"> What are metamorphic rocks? <p>Lesson 6</p> <ul style="list-style-type: none"> What is the rock cycle? 	<p>Explain how fossils are formed and how they can provide evidence about plants and animals that once lived on Earth.</p>	<ul style="list-style-type: none"> Describe ways in which igneous rocks are used. <p>Lesson 4</p> <ul style="list-style-type: none"> Describe how sedimentary rocks form. List and describe the three major types of sedimentary rocks. <p>Lesson 5</p> <ul style="list-style-type: none"> Describe the conditions under which metamorphic rocks form. <p>Lesson 6</p> <ul style="list-style-type: none"> Describe the rock cycle. 		
<p>Chapter 3 Plate Tectonics (2 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Alfred Wegener proposed that all the continents were once joined together in a single landmass and have since drifted apart. <p>Lesson 2</p> <ul style="list-style-type: none"> Mid-ocean ridges form long chains of mountains that rise up from the ocean floor. 	<ol style="list-style-type: none"> Drifting Continents Sea-floor spreading Theory of Plate Tectonics 	<p>Lesson 1</p> <ul style="list-style-type: none"> What was Wegener's hypothesis about the continents? <p>Lesson 2</p> <ul style="list-style-type: none"> What are mid-ocean ridges? What is sea-floor spreading? What happens at deep ocean trenches? <p>Lesson 3</p>	<p>3.2.7.B3 Differentiate among convection, conduction, and radiation.</p> <p>Explain why heat energy consists of the random motion and vibrations of the particles of matter.</p> <p>3.3.7.A1 Define basic features of the rock cycle.</p> <p>Describe the layers of the earth.</p> <p>Differentiate among the mechanisms by which heat is transferred through the Earth's system.</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Explain Alfred Wegener's hypothesis about the continents, evidence supporting the hypothesis, and why the hypothesis was rejected. <p>Lesson 2</p> <ul style="list-style-type: none"> Define and describe mid-ocean ridges. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<ul style="list-style-type: none"> Part the ocean floor sinks back into the mantle at deep ocean trenches. <p>Lesson 3</p> <ul style="list-style-type: none"> The theory of plate tectonics states that Earth's plates are in slow, constant motion, driven by convection currents in the mantle. 		<ul style="list-style-type: none"> What is the theory of plate tectonics? 	<p>3.3.7.A3 Explain and give examples of how physical evidence, such as fossils and surface features of glaciation support theories that the Earth has evolved over geologic time.</p> <p>Compare geologic processes over time.</p> <p>S7.D.1.1.1 Identify and describe soil characteristics (i.e., particle size, porosity, and permeability) of different biomes.</p> <p>S7.D.1.1.2 Explain how fossils are formed and how they can provide evidence about plants and animals that once lived on Earth.</p>	<ul style="list-style-type: none"> Explain how sea-floor spreading affects Earth's crust. Explain deep-ocean trenches and the process of subduction. <p>Lesson 3</p> <ul style="list-style-type: none"> Explain the theory of plate tectonics. 	<p>Separate testing environment when applicable.</p>	
<p>Chapter 4 Earthquakes (2Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Tension, compression, and shearing work over millions of years to change the shape and volume of rock. <p>Lesson 2</p> <ul style="list-style-type: none"> Seismic waves are vibrations that are similar to sound waves. They travel through Earth carrying energy released by an earthquake. Geologists use seismic waves to locate an earthquakes epicenter. <p>Lesson 3</p> <ul style="list-style-type: none"> Maps showing earthquakes show that earthquakes often occur along plate boundaries. 	<ol style="list-style-type: none"> Forces in Earth's crust Earthquakes and Seismic Waves Monitoring Earthquakes 	<p>Lesson 1</p> <ul style="list-style-type: none"> How does stress change Earth's crust? How do faults form? How does plate movement create new landforms? <p>Lesson 2</p> <ul style="list-style-type: none"> What are seismic waves? How are earthquakes measured? How is an epicenter located? <p>Lesson 3</p> <ul style="list-style-type: none"> How do seismographs work? What patterns do seismograph data reveal? 	<p>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).</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Explain how stress in the crust changes Earth's surface. Describe the three major types of faults. Compare and contrast the land features that result from plate movement. <p>Lesson 2</p> <ul style="list-style-type: none"> Describe how the energy of an earthquake travels through Earth. Identify the scales used to measure the strength of an earthquake. Explain how scientists locate the epicenter of an earthquake. <p>Lesson 3</p> <ul style="list-style-type: none"> Explain how seismographs work. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

					<ul style="list-style-type: none"> Explain the patterns that seismographic data reveal. 		
Chapter 5 Volcanoes (1-2 Weeks)	<p>Lesson 1</p> <ul style="list-style-type: none"> Volcanic belts form along the boundaries of Earth's plates. A volcano forms above a hot spot when magma erupts through the crust and reaches the surface. <p>Lesson 2</p> <ul style="list-style-type: none"> Geologists classify volcanic eruptions as quiet or explosive. Geologists often use the terms active, dormant, or extinct to describe a volcano's stage of activity. <p>Lesson 3</p> <ul style="list-style-type: none"> Volcanic eruptions create landforms made of lava, ash, and other materials. 	<ol style="list-style-type: none"> Volcanoes and Plate Tectonics Volcanic eruptions Volcanic Landforms 	<p>Lesson 1</p> <ul style="list-style-type: none"> Where are volcanoes found on Earth's surface? <p>Lesson 2</p> <ul style="list-style-type: none"> What happens when a volcano erupts? What are the stages of volcanic activity? <p>Lesson 3</p> <ul style="list-style-type: none"> What landforms do lava and ash create? What landforms does magma create? 	<p>3.3.7.A1</p> <p>Define basic features of the rock cycle.</p> <p>Describe the layers of the earth.</p> <p>Differentiate among the mechanisms by which heat is transferred through the Earth's system.</p> <p>3.3.8.A1</p> <p>Distinguish between physical and chemical weathering.</p> <p>Compare and contrast the types of energy that drive Earth's systems.</p> <p>3.3.8.A3</p> <p>Explain how matter on earth is conserved throughout the geological processes over time.</p> <p>S7.D.1.1.1</p> <p>Identify and describe soil characteristics (i.e., particle size, porosity, and permeability) of different biomes.</p> <p>S7.D.1.1.2</p> <p>Explain how fossils are formed and how they can provide evidence about plants and animals that once lived on Earth.</p> <p>S7.D.1.2.1</p> <p>Compare the different water systems on Earth (e.g., wetland, watershed, ocean, river).</p> <p>S7.D.1.2.2</p> <p>Compare biotic and abiotic features of freshwater and saltwater systems.</p> <p>S7.D.1.2.3</p> <p>Describe the importance of water systems on the diversity and distribution of life on Earth.</p> <p>S7.D.2.1.1</p>	<ul style="list-style-type: none"> Identify where volcanic regions and hot spot volcanoes are found on Earth's surface, and why they are found there. <p>Lesson 2</p> <ul style="list-style-type: none"> Explain what happens when a volcano erupts and the two different types of eruptions that can occur. Describe the stages of volcanic activity. <p>Lesson 3</p> <ul style="list-style-type: none"> List the landforms that lava and ash create. Explain how magma that hardens beneath Earth's surface creates landforms. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

Explain the effect of wind patterns, circulation of oceans currents, atmospheric pressure, and temperature on weather.

S7.D.2.1.2
Describe changes in atmospheric conditions associated with various weather patterns.

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).

S8.A.3.2.2
Describe how engineers use models to develop new and improved technologies to solve problems.

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).

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.B.3.3.3
Describe how waste management affects the environment (e.g., recycling, composting, landfills, incineration, sewage treatment).

S8.B.3.3.4
Explain the long-term effects of using integrated pest management (e.g., herbicides, natural predators, biogenetics) on the environment.

S8.D.1.1.1
Explain the rock cycle as changes in the solid earth and rock types (igneous –

				<p>granite, basalt, obsidian, pumice; sedimentary – limestone, sandstone, shale, coal; and metamorphic – slate, quartzite, marble, gneiss).</p> <p>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).</p> <p>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.</p> <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> <p>S8.D.2.1.1 Explain the impact of water systems on the local weather or the climate of a 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>			
Chapter 6 Weathering and Soil (1-2 Weeks)	Lesson 1 • Erosion works continuously to weather and carry away rocks at Earth's surface. Lesson 2	1. Rocks and Weathering 2. How soil forms 3. Soil Conservation	Lesson 1 • What processes wear down and build up Earth's surface? • What are the different types	3.3.7.A1 Define basic features of the rock cycle. Describe the layers of the earth. Differentiate among the mechanisms by which heat is transferred through the Earth's system.	Lesson 1 • Describe the processes that wear down and build up Earth's surface. • Identify the causes of the	Students will be given the following: Preferential seating when applicable Study guides	Daily assessments End of chapter exams

<ul style="list-style-type: none"> • Soil is a mixture of rock particles, minerals, decayed organic material, water, and air. <p>Lesson 3</p> <ul style="list-style-type: none"> • The value of soil is reduced when soil loses its fertility or when topsoil is lost due to erosion. 			<p>of mass movement?</p> <p>Lesson 2</p> <ul style="list-style-type: none"> • How does moving water cause erosion? • What land features are formed by water erosion and deposition? <p>Lesson 3</p> <ul style="list-style-type: none"> • How do glaciers form and move? • How do glaciers cause erosion and deposition? <p>Lesson 4</p> <ul style="list-style-type: none"> • How do waves cause erosion and deposition? <p>Lesson 5</p> <ul style="list-style-type: none"> • How does wind cause erosion and deposition? 	<p>3.3.8.A1 Distinguish between physical and chemical weathering.</p> <p>Compare and contrast the types of energy that drive Earth's systems.</p> <p>3.3.8.A3 Explain how matter on earth is conserved throughout the geological processes over time.</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.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, 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.B.3.3.4 Explain the long-term effects of using integrated pest management (e.g., herbicides, natural predators, biogenetics) on the environment.</p>	<p>different types of mass movement.</p> <p>Lesson 2</p> <ul style="list-style-type: none"> • Explain how moving water causes erosion. • Describe some of the land features that are formed by water erosion and deposition. <p>Lesson 3</p> <ul style="list-style-type: none"> • Explain how glaciers form and move. • Explain how glaciers cause erosion and deposition. <p>Lesson 4</p> <ul style="list-style-type: none"> • Explain how glaciers form and move. • Explain how glaciers cause erosion and deposition. <p>Lesson 5</p> <ul style="list-style-type: none"> • Describe how ocean waves cause erosion and deposition. <p>Lesson 6</p> <ul style="list-style-type: none"> • Explain how wind causes erosion and deposition. 	<p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Labs and classroom activities</p>
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				<p>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).</p> <p>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).</p> <p>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.</p> <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> <p>S8.D.2.1.1 Explain the impact of water systems on the local weather or the climate of a 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>			
Chapter 7 Erosion and Deposition (1-2 Weeks)	Lesson 1 • Weathering, erosion, and deposition act together in a	1. Mass movement 2. water erosion 3. glacial erosion	Lesson 1 • What processes wear down and build up	3.3.7.A1 Define basic features of the rock cycle. Describe the layers of the earth.	Lesson 1 • Describe the processes that wear down and	Students will be given the following: Preferential seating when applicable	Daily assessments End of chapter exams

	<p>cycle that wears down and builds up Earth's surface.</p> <p>Lesson 2</p> <ul style="list-style-type: none"> Moving water is the major agent of the erosion that has shaped Earth's land surface. <p>Lesson 3</p> <ul style="list-style-type: none"> Continental glaciers can flow in all directions as they move. Glaciers can form only in an area where more snow falls than melts. <p>Lesson 4</p> <ul style="list-style-type: none"> Waves shape the coast through erosion by breaking down rock and moving sand and other sediment. <p>Lesson 5</p> <ul style="list-style-type: none"> Wind erosion and deposition may form sand dunes and loess deposits, 	<p>4. wave erosion 5. wind erosion</p>	<p>Earth's surface?</p> <ul style="list-style-type: none"> What are the different types of mass movement? <p>Lesson 2</p> <ul style="list-style-type: none"> How does moving water cause erosion? What land features are formed by water erosion and deposition? <p>Lesson 3</p> <ul style="list-style-type: none"> How do glaciers form and move? How do glaciers cause erosion and deposition? <p>Lesson 4</p> <ul style="list-style-type: none"> How do waves cause erosion and deposition? <p>Lesson 5</p> <ul style="list-style-type: none"> How does wind cause erosion and deposition. 	<p>Differentiate among the mechanisms by which heat is transferred through the Earth's system. 3.3.8.A1</p> <p>Distinguish between physical and chemical weathering.</p> <p>Compare and contrast the types of energy that drive Earth's systems.</p> <p>3.3.8.A3 Explain how matter on earth is conserved throughout the geological processes over time.</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.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, 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.B.3.3.4</p>	<p>build up Earth's surface.</p> <ul style="list-style-type: none"> Identify the causes of the different types of mass movement. <p>Lesson 2</p> <ul style="list-style-type: none"> Explain how moving water causes erosion. Describe some of the land features that are formed by water erosion and deposition. <p>Lesson 3</p> <ul style="list-style-type: none"> Explain how glaciers form and move. Explain how glaciers cause erosion and deposition. <p>Lesson 4</p> <ul style="list-style-type: none"> Explain how glaciers form and move. Explain how glaciers cause erosion and deposition. <p>Lesson 5</p> <ul style="list-style-type: none"> Describe how ocean waves cause erosion and deposition. <p>Lesson 6</p> <ul style="list-style-type: none"> Explain how wind causes erosion and deposition. 	<p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Labs and classroom activities</p>
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Explain the long-term effects of using integrated pest management (e.g., herbicides, natural predators, biogenetics) on the environment.

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.

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).

S8.D.2.1.1
Explain the impact of water systems on the local weather or the climate of a region (e.g., lake effect snow, land/ocean breezes).

S8.D.2.1.2
Identify how global patterns of atmospheric movement influence regional weather and climate.

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>Chapter 8 A Trip Through Geologic Time (2-3 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> The fossil record provides evidence about the history of life and past environments on Earth. <p>Lesson 2</p> <ul style="list-style-type: none"> According to the law of superposition, in undisturbed horizontal sedimentary rock layers the oldest layer is at the bottom. Each higher layer is younger than the layers below it. <p>Lesson 3</p> <ul style="list-style-type: none"> In radioactive dating, scientists first determine the amount of radioactive element in a rock and compare it with the amount of a stable element into which the radioactive element decays. <p>Lesson 4</p> <ul style="list-style-type: none"> Because the time span of Earth's past is so great, geologists use the geologic time scale to show Earth's history. <p>Lesson 5</p> <ul style="list-style-type: none"> Scientists think that Earth began as a ball of dust, rock, and ice in space. Gravity pulled this mass together. 	<ol style="list-style-type: none"> Fossils The Relative age of rocks Radioactive Dating Geologic Time Scale Early Earth Eras of Earth's History 	<p>Lesson 1</p> <ul style="list-style-type: none"> What are fossils? What are the kinds of fossils? What do fossils show? <p>Lesson 2</p> <ul style="list-style-type: none"> How old are rock layers? How can rock layers change? <p>Lesson 3</p> <ul style="list-style-type: none"> What is radioactive decay? What is radioactive dating? <p>Lesson 4</p> <ul style="list-style-type: none"> What is the geologic time scale? <p>Lesson 5</p> <ul style="list-style-type: none"> How did Earth form? <p>Lesson 6</p> <ul style="list-style-type: none"> What happened in the Paleozoic Era? What happened in the Mesozoic Era? What happened in the Cenozoic Era? 	<p>3.3.7.A1 Define basic features of the rock cycle.</p> <p>Describe the layers of the earth.</p> <p>Differentiate among the mechanisms by which heat is transferred through the Earth's system.</p> <p>3.3.8.A3 Explain how matter on earth is conserved throughout the geological processes over time.</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.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).</p> <p>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.</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Explain how fossils form. Identify the different kinds of fossils. Describe what fossils tell about organisms and environments of the past. <p>Lesson 2</p> <ul style="list-style-type: none"> Describe how geologists determine the relative age of rocks. Explain how unconformities and folding can alter the order of rocks. <p>Lesson 3</p> <ul style="list-style-type: none"> Explain what happens during radioactive decay. Describe what can be learned from radioactive dating. <p>Lesson 4</p> <ul style="list-style-type: none"> Explain how and why the geologic time scale is used to show Earth's history. <p>Lesson 5</p> <ul style="list-style-type: none"> Explain how Earth developed during Precambrian time. <p>Lesson 6</p> <ul style="list-style-type: none"> Describe the major events in the Paleozoic Era. Describe the major events in 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>
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	<p>Lesson 6</p> <ul style="list-style-type: none"> Earth's history is broken up into different eras. 				<p>the Mesozoic Era.</p> <ul style="list-style-type: none"> Describe the major events in the Cenozoic Era. 		
<p>Chapter 9 Energy Sources (1-2 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Three major fossil fuels are coal, oil, and natural gas. Since fossil fuels take hundreds of millions of years to form, they are considered nonrenewable resources. <p>Lesson 2</p> <ul style="list-style-type: none"> Renewable sources of energy include sunlight, water, wind, nuclear power, biomass fuels, geothermal energy, and hydrogen. <p>Lesson 3</p> <ul style="list-style-type: none"> One way to preserve our current energy resources is to increase the efficiency of our energy use. 	<ol style="list-style-type: none"> Fossil fuels Alternative Sources of Energy Energy Use and Conservation 	<p>Lesson 1</p> <ul style="list-style-type: none"> What are the three major fossil fuels? Why are fossil fuels nonrenewable resources? <p>Lesson 2</p> <ul style="list-style-type: none"> What are some renewable sources of energy? How does a nuclear power plant produce electricity? <p>Lesson 3</p> <ul style="list-style-type: none"> How has energy use changed over time? How can we ensure there will be enough energy for the future? 	<p>3.3.7.A1</p> <p>Define basic features of the rock cycle.</p> <p>Describe the layers of the earth.</p> <p>Differentiate among the mechanisms by which heat is transferred through the Earth's system.</p> <p>3.3.8.A2</p> <p>Describe renewable and nonrenewable energy resources.</p> <p>3.3.8.A3</p> <p>Explain how matter on earth is conserved throughout the geological processes over time.</p> <p>S8.B.3.3.2</p> <p>Explain how renewable and nonrenewable resources provide for human needs (i.e., energy, food, water, clothing, and shelter).</p> <p>S8.D.1.1.1</p> <p>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).</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Name the three major fossil fuels. Explain why fossil fuels are considered nonrenewable. <p>Lesson 2</p> <ul style="list-style-type: none"> Identify and describe various renewable sources of energy. Explain how a nuclear power plant produces electricity. <p>Lesson 3</p> <ul style="list-style-type: none"> Explain how human energy use has changed over time. Name ways to ensure that there will be enough energy for the future. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>
<p>Chapter 10 Water (2-3 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> All living things need water in order to carry out their body processes. In addition, many living things live in water. In the water cycle, water continuously moves from Earth's surface to the atmosphere 	<ol style="list-style-type: none"> Water on Earth Surface Water Water Underground Exploring the Ocean Wave Action Currents and Climate. 	<p>Lesson 1</p> <ul style="list-style-type: none"> Why is water important? Where is water found? What is the water cycle? <p>Lesson 2</p> <ul style="list-style-type: none"> What is a river system? What are ponds and lakes? How can lakes change? 	<p>3.3.7.A4</p> <p>Differentiate among Earth's water systems.</p> <p>Describe the motions of tides and identify their causes.</p> <p>3.3.8.A4</p> <p>Explain how the oceans form one interconnected circulation system powered by wind, tides, the Earth's rotation, and water density differences.</p> <p>3.3.8.A5</p> <p>Explain how the curvature of the earth contributes to climate.</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Describe how Earth's water is distributed. State how people and other living things use water. Explain how Earth's water moves through the water cycle. <p>Lesson 2</p>	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>and back, driven by the energy from the sun and gravity.</p> <p>Lesson 2</p> <ul style="list-style-type: none"> • A river and all the streams and smaller rivers that flow into it make up a river system. <p>Lesson 3</p> <ul style="list-style-type: none"> • Precipitation infiltrates the ground and becomes groundwater. • People obtain groundwater for their use by drilling a well. <p>Lesson 4</p> <ul style="list-style-type: none"> • The water in Earth's oceans varies in salinity, temperature, and pressure. <p>Lesson 5</p> <ul style="list-style-type: none"> • Most waves form when winds blowing over the water's surface transmit their energy to the wave. <p>Lesson 6</p> <ul style="list-style-type: none"> • The Coriolis Effect causes currents to move in a clockwise rotation in the Northern Hemisphere and a counterclockwise rotation in the Southern Hemisphere. 		<p>Lesson 3</p> <ul style="list-style-type: none"> • How does water move underground? • How do people use groundwater? <p>Lesson 4</p> <ul style="list-style-type: none"> • How do conditions vary in Earth's oceans? • What are some features of the ocean floor? <p>Lesson 5</p> <ul style="list-style-type: none"> • How do waves form and change? • How do waves affect the shore? <p>Lesson 6</p> <ul style="list-style-type: none"> • What causes surface currents? • What causes deep currents? 	<p>Compare and contrast water vapor, clouds, and humidity.</p> <p>S7.D.1.2.1 Compare the different water systems on Earth (e.g., wetland, watershed, ocean, river).</p> <p>S7.D.1.2.3 Describe the importance of water systems on the diversity and distribution of life on Earth.</p> <p>S8.D.2.1.1 Explain the impact of water systems on the local weather or the climate of a region (e.g., lake effect snow, land/ocean breezes).</p>	<ul style="list-style-type: none"> • Tell what a river system is. • Explain how ponds and lakes form. • Describe the changes that occur in ponds and lakes. <p>Lesson 3</p> <ul style="list-style-type: none"> • Describe how water moves underground through layers of soil and rock. • Explain how people obtain water from an aquifer. <p>Lesson 4</p> <ul style="list-style-type: none"> • Identify characteristics of the ocean and ocean water. • Identify the features and main sections of the ocean floor. <p>Lesson 5</p> <ul style="list-style-type: none"> • Explain how waves form and change and describe the characteristics of waves. • Describe how waves affect shorelines and beaches. <p>Lesson 6</p> <ul style="list-style-type: none"> • Identify what causes surface currents and explain how surface currents affect climate. • Identify the causes of deep currents and describe the 	<p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	
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					effects that deep currents have.		
Chapter 11 The Atmosphere (2-3 Weeks)	<p>Lesson 1</p> <ul style="list-style-type: none"> • Earth's atmosphere consists of nitrogen, oxygen, carbon dioxide, water vapor, and other gases. <p>Lesson 2</p> <ul style="list-style-type: none"> • Because air has mass, it also has other properties, including density and pressure. • Air pressure decreases as altitude increases. <p>Lesson 3</p> <ul style="list-style-type: none"> • Scientists divide Earth's atmosphere into four main layers classified according to changes in temperature. These layers are the troposphere, the stratosphere, the mesosphere, and the thermosphere. <p>Lesson 4</p> <ul style="list-style-type: none"> • Most of the energy from the sun travels to Earth in the form of visible light and infrared radiation. A smaller amount arrives as ultraviolet radiation. • Some sunlight is absorbed or reflected by the atmosphere 	<ol style="list-style-type: none"> 1. The Air Around You 2. Air Pressure 3. Layers of the Atmosphere 4. Energy in Earth's Atmosphere 5. Heat Transfer 6. Winds 	<p>Lesson 1</p> <ul style="list-style-type: none"> • What is the composition of Earth's atmosphere? • How is the atmosphere a system? <p>Lesson 2</p> <ul style="list-style-type: none"> • What are some properties of air? • What instruments measure air pressure? • How does altitude affect air pressure and density? <p>Lesson 3</p> <ul style="list-style-type: none"> • What are the four main layers of the atmosphere? • What are the characteristics of the atmosphere's layers? <p>Lesson 4</p> <ul style="list-style-type: none"> • How does energy from the sun travel to Earth? • What happens to the Sun's energy when it reaches Earth? <p>Lesson 5</p> <ul style="list-style-type: none"> • How is temperature measured? • How is heat transferred? <p>Lesson 6</p> <ul style="list-style-type: none"> • What causes winds? 	<p>3.3.7.A5</p> <p>Describe basic elements of meteorology.</p> <p>Explain the relationship between the energy provided by the sun and the temperature differences among water, land and atmosphere.</p> <p>3.3.7.A6</p> <p>MODELS/SCALES</p> <p>Describe the scales involved in characterizing Earth and its atmosphere.</p> <p>MODELS/SCALES</p> <p>Create models of Earth's common physical features.</p> <p>S7.D.2.1.1</p> <p>Explain the effect of wind patterns, circulation of oceans currents, atmospheric pressure, and temperature on weather.</p> <p>S7.D.2.1.2</p> <p>Describe changes in atmospheric conditions associated with various weather patterns.</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> • Describe the composition of the atmosphere. • State how the atmosphere is a system. <p>Lesson 2</p> <ul style="list-style-type: none"> • Identify some properties of air. • Describe how barometers can be used to measure air pressure. • Explain how altitude affects air pressure and density. <p>Lesson 3</p> <ul style="list-style-type: none"> • Identify the four main layers of the atmosphere and their characteristics. • Explain the characteristics of the atmosphere's layers. <p>Lesson 4</p> <ul style="list-style-type: none"> • State in what form energy travels from the Sun to Earth. • Explain what happens to the Sun's energy in the atmosphere and at Earth's surface. <p>Lesson 5</p> <ul style="list-style-type: none"> • Describe how temperature is measured. • Describe how heat is transferred. <p>Lesson 6</p>	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>before it can reach the Earth's surface. The rest passes through to the surface.</p> <p>Lesson 5</p> <ul style="list-style-type: none"> Heat is transferred in three ways: convection, conduction, and radiation. <p>Lesson 6</p> <ul style="list-style-type: none"> Winds are caused by differences in air pressure. Most differences in air pressure are caused by the unequal heating of the atmosphere. 		<ul style="list-style-type: none"> How do local winds and global winds differ? 		<ul style="list-style-type: none"> Explain how scientists describe and explain winds. Distinguish between local winds and global winds and identify major global wind belts. 		
<p>Chapter 12 Weather (2-3 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> In the water cycle, water vapor enters the atmosphere through evaporation and leaves condensation. Lesson 2 Clouds form when water vapor in the air condenses to form liquid water or ice crystals. <p>Lesson 3</p> <ul style="list-style-type: none"> Common types of precipitation include rain, sleet, freezing rain, snow, and hail. <p>Lesson 4</p> <ul style="list-style-type: none"> Four major types of air masses influence the weather in North 	<ol style="list-style-type: none"> Water in the atmosphere Clouds Precipitation Air masses Storms Predicting the weather 	<p>Lesson 1</p> <ul style="list-style-type: none"> How does water move through the atmosphere? What is relative humidity and how is it measured? <p>Lesson 2</p> <ul style="list-style-type: none"> How do clouds form? What are the three main types of clouds? <p>Lesson 3</p> <ul style="list-style-type: none"> What are common types of precipitation? What are the causes and effects of floods and droughts? <p>Lesson 4</p>	<p>3.3.7.A5 Describe basic elements of meteorology.</p> <p>Explain the relationship between the energy provided by the sun and the temperature differences among water, land and atmosphere.</p> <p>3.3.7.A6 MODELS/SCALES Describe the scales involved in characterizing Earth and its atmosphere.</p> <p>MODELS/SCALES Create models of Earth's common physical features.</p> <p>S7.D.1.1.2 Explain how fossils are formed and how they can provide evidence about plants and animals that once lived on Earth.</p> <p>S7.D.1.2.1 Compare the different water systems on Earth (e.g., wetland, watershed, ocean, river).</p> <p>S7.D.2.1.1</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Describe how water moves to and from the atmosphere during the water cycle. Describe humidity and how it is measured. <p>Lesson 2</p> <ul style="list-style-type: none"> Explain how clouds form. Name the three main types of clouds. <p>Lesson 3</p> <ul style="list-style-type: none"> Identify the common types of precipitation. Describe floods and droughts and their effects. <p>Lesson 4</p> <ul style="list-style-type: none"> Identify the major air masses that 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>America; maritime polar, maritime tropical, continental polar, and continental tropical.</p> <p>Lesson 5</p> <ul style="list-style-type: none"> • A storm is a violent disturbance in the atmosphere. <p>Lesson 6</p> <ul style="list-style-type: none"> • Meteorologists use maps, charts, computers, and other technology to make weather forecasts. 		<ul style="list-style-type: none"> • What are the major air masses? • What are the main types of fronts? • What weather do cyclones and anticyclones bring? <p>Lesson 5</p> <ul style="list-style-type: none"> • How do the different types of storms form? • How can you stay safe in a storm? <p>Lesson 6</p> <ul style="list-style-type: none"> • How do you predict the weather? • What can you learn from weather maps? 	<p>Explain the effect of wind patterns, circulation of oceans currents, atmospheric pressure, and temperature on weather.</p> <p>S7.D.2.1.2 Describe changes in atmospheric conditions associated with various weather patterns.</p>	<p>affect the weather in North America and describe how they move.</p> <ul style="list-style-type: none"> • Name the main types of fronts. • Explain the type of weather that is associated with cyclones and anticyclones. <p>Lesson 5</p> <ul style="list-style-type: none"> • List the main kinds of storms and explain how they form. • Describe measures that can be taken to ensure safety in a storm. <p>Lesson 6</p> <ul style="list-style-type: none"> • Explain how weather forecasts use observations, data, and technology to predict the weather. 		
<p>Chapter 13 Climate and Climate Change (1-2 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> • Temperature is affected by latitude, altitude, distance from large bodies of water, and ocean currents. <p>Lesson 2</p> <ul style="list-style-type: none"> • Scientists classify climates according to two major factors: temperature and precipitation. <p>Lesson 3</p> <ul style="list-style-type: none"> • Possible explanations for major climate 	<ol style="list-style-type: none"> 1. What causes climate? 2. Climate regions 3. Changes in climate 4. Human activities and climate 	<p>Lesson 1</p> <ul style="list-style-type: none"> • What factors affect temperature? • What factors affect precipitation? <p>Lesson 2</p> <ul style="list-style-type: none"> • How do scientists classify climates? • What are the six main climate regions? <p>Lesson 3</p> <ul style="list-style-type: none"> • How do scientists study 	<p>3.3.7.A5 Describe basic elements of meteorology. Explain the relationship between the energy provided by the sun and the temperature differences among water, land and atmosphere.</p> <p>3.3.7.A6 MODELS/SCALES Describe the scales involved in characterizing Earth and its atmosphere.</p> <p>MODELS/SCALES Create models of Earth's common physical features.</p> <p>S7.D.1.1.1</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> • Identify the factors that influence temperature. • Identify factors that influence precipitation. <p>Lesson 2</p> <ul style="list-style-type: none"> • Identify factors used to define climates. • Describe the six main climate regions. <p>Lesson 3</p> <ul style="list-style-type: none"> • Explain the principle that scientists follow 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>changes include movement of the continents, variations in the position of Earth relative to the Sun, major volcanic eruptions, and changes in the Sun's energy output.</p> <p>Lesson 4</p> <ul style="list-style-type: none"> Many human activities are increasing the level of greenhouse gases in the atmosphere and producing changes in climate worldwide. This increase is causing global temperatures to rise. 		<p>ancient climates?</p> <ul style="list-style-type: none"> What natural factors can cause climate change? <p>Lesson 4</p> <ul style="list-style-type: none"> How are human activities affecting Earth's climate? 	<p>Identify and describe soil characteristics (i.e., particle size, porosity, and permeability) of different biomes.</p> <p>S7.D.1.1.2 Explain how fossils are formed and how they can provide evidence about plants and animals that once lived on Earth.</p> <p>S7.D.1.2.1 Compare the different water systems on Earth (e.g., wetland, watershed, ocean, river).</p> <p>S7.D.1.2.2 Compare biotic and abiotic features of freshwater and saltwater systems.</p> <p>S7.D.1.2.3 Describe the importance of water systems on the diversity and distribution of life on Earth.</p> <p>S7.D.2.1.1 Explain the effect of wind patterns, circulation of oceans currents, atmospheric pressure, and temperature on weather.</p> <p>S7.D.2.1.2 Describe changes in atmospheric conditions associated with various weather patterns.</p>	<p>in studying ancient climates.</p> <ul style="list-style-type: none"> Identify natural factors that can cause climate change. <p>Lesson 4</p> <ul style="list-style-type: none"> Explain how human activities are affecting the temperature of the atmosphere 	<p>environment when applicable.</p>	
<p>Chapter 14 Earth, Moon, and Sun (2-3 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> A constellation is a pattern or group of stars that people imagined to represent a figure, animal, or object. <p>Lesson 2</p> <ul style="list-style-type: none"> Earth moves in space in two major ways; rotation and revolution. <p>Lesson 3</p> <ul style="list-style-type: none"> The strength of the force of gravity between 	<ol style="list-style-type: none"> The sky from Earth Earth in space Gravity and motion Phases and eclipses Tides Earth's moons 	<p>Lesson 1</p> <ul style="list-style-type: none"> What can you see in the night sky? How do objects in the sky appear to move? <p>Lesson 2</p> <ul style="list-style-type: none"> How does Earth move? What causes seasons? <p>Lesson 3</p> <ul style="list-style-type: none"> What determines the gravity? 	<p>3.3.7.B1 Explain how gravity is the major force in the formation of the planets, stars, and the solar system.</p> <p>Describe gravity as a major force in determining the motions of planets, stars, and the solar system.</p> <p>Compare and contrast properties and conditions of objects in the solar system to those on Earth.</p> <p>3.3.7.B2 SCALE AND MEASUREMENT Identify a variety of instruments used to gather evidence about the universe.</p> <p>PATTERNS</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Identify objects and constellations visible without a telescope in the night sky. Describe the apparent motions of stars and planets throughout the year. <p>Lesson 2</p> <ul style="list-style-type: none"> Demonstrate how Earth moves in space. Explain what causes the cycle 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<p>two objects depends on two factors; the masses of the objects and the distance between them.</p> <p>Lesson 4</p> <ul style="list-style-type: none"> • The changing relative positions of the moon, Earth, and sun cause the phases of the moon. 		<ul style="list-style-type: none"> • What keeps objects in orbit? <p>Lesson 4</p> <ul style="list-style-type: none"> • What causes the moon's phases? • What are eclipses? 	<p>Describe repeating patterns in the Sun-Earth-Moon system and the positions of stars.</p> <p>SCALE</p> <p>Relate planetary size and distance in our solar system using an appropriate scale model.</p> <p>3.3.7.B3</p> <p>Understand how theories are developed. Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions. Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. Describe relationships using inference and prediction. Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories. Analyze alternative explanations and understanding that science advances through legitimate skepticism. Use mathematics in all aspects of scientific inquiry. Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.</p> <p>3.3.8.B1</p> <p>Explain how light, measured remotely, can be used to classify objects in the universe.</p> <p>3.3.8.B2</p> <p>SCALE AND MEASUREMENT</p> <p>Explain measurements and evidence indicating the age of the universe.</p> <p>3.3.8.B3</p>	<p>of seasons on Earth.</p> <p>Lesson 3</p> <ul style="list-style-type: none"> • Identify what determines the strength of the force of gravity between two objects. • Describe two factors that keep the moon and Earth in orbit. <p>Lesson 4</p> <ul style="list-style-type: none"> • Explain what causes the phases of the moon. • Describe solar and lunar eclipses. 	<p>when applicable.</p>	
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Compare and contrast scientific theories.
Know that both direct and indirect observations are used by scientists to study the natural world and universe.
Identify questions and concepts that guide scientific investigations.
Formulate and revise explanations and models using logic and evidence.
Recognize and analyze alternative explanations and models.
Explain the importance of accuracy and precision in making valid measurements.

3.3.B

Origin and Evolution of the Universe

S7.D.3.1.1

Describe the patterns of Earth's rotation and revolution in relation to the Sun and Moon (i.e., solar eclipse, lunar eclipse, phases of the Moon, and time).

S7.D.3.1.2

Explain how gravity is the essential force in determining the motions of the planets and other objects in the solar system.

S7.D.3.1.3

Compare the properties and conditions of objects in the solar system to those of Earth.

S7.D.3.1.4

Identify and describe instruments that are used to study the universe (e.g., telescope, probes, satellites, space observatories).

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,

				<p>hydraulics, barometer) extends and enhances human abilities for specific purposes.</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 contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).</p>			
<p>Chapter 15 The Solar System (3-4 Weeks)</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> In a geocentric model, Earth is at the center of the revolving planets and stars. <p>Lesson 2</p> <ul style="list-style-type: none"> Our solar system consists of the sun, the planets, their moons, and a variety of smaller objects. <p>Lesson 3</p> <ul style="list-style-type: none"> The sun has an interior and an atmosphere. <p>Lesson 4</p> <ul style="list-style-type: none"> The inner planets are small and dense and have rocky surfaces. <p>Lesson 5</p> <ul style="list-style-type: none"> The four outer planets are much larger and more massive than Earth, and they do not have solid surfaces. <p>Lesson 6</p>	<ol style="list-style-type: none"> Models of the Solar System Introducing the solar system The Sun The inner planets The Outer planets Small solar system objects 	<p>Lesson 1</p> <ul style="list-style-type: none"> What was the geocentric model? How did the heliocentric model develop? <p>Lesson 2</p> <ul style="list-style-type: none"> What makes up the solar system? How did the solar system form? <p>Lesson 3</p> <ul style="list-style-type: none"> What is the structure of the Sun? What features can you see on the Sun? <p>Lesson 4</p> <ul style="list-style-type: none"> What do the inner planets have in common? What are the characteristics of the inner planets? 	<p>3.3.7.B1 Explain how gravity is the major force in the formation of the planets, stars, and the solar system.</p> <p>Describe gravity as a major force in determining the motions of planets, stars, and the solar system.</p> <p>Compare and contrast properties and conditions of objects in the solar system to those on Earth.</p> <p>3.3.7.B2 SCALE AND MEASUREMENT Identify a variety of instruments used to gather evidence about the universe.</p> <p>PATTERNS Describe repeating patterns in the Sun-Earth-Moon system and the positions of stars.</p> <p>SCALE Relate planetary size and distance in our solar system using an appropriate scale model.</p> <p>3.3.7.B3 Understand how theories are developed.</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> Describe the geocentric model of the solar system. Recognize how scientists such as Copernicus, Kepler, and Galileo contributed to acceptance of the heliocentric model. <p>Lesson 2</p> <ul style="list-style-type: none"> Identify the objects that make up the solar system. Explain how the solar system formed. <p>Lesson 3</p> <ul style="list-style-type: none"> Identify the layers of the sun's interior and atmosphere. Describe features that form on or 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and classroom activities</p>

	<ul style="list-style-type: none"> Scientists classify these objects based on their sizes, shapes, compositions, and orbits. Major categories are dwarf planets, comets, asteroids, and meteoroids. 		<p>Lesson 5</p> <ul style="list-style-type: none"> What do the outer planets have in common? What are the characteristics of the outer planets? <p>Lesson 6</p> <ul style="list-style-type: none"> How do scientists classify small objects in the solar system? 	<p>Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions.</p> <p>Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations.</p> <p>Describe relationships using inference and prediction.</p> <p>Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations.</p> <p>Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.</p> <p>Analyze alternative explanations and understanding that science advances through legitimate skepticism.</p> <p>Use mathematics in all aspects of scientific inquiry.</p> <p>Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.</p> <p>3.3.8.B1 Explain how light, measured remotely, can be used to classify objects in the universe.</p> <p>3.3.8.B2 SCALE AND MEASUREMENT Explain measurements and evidence indicating the age of the universe.</p> <p>3.3.8.B3 Compare and contrast scientific theories. Know that both direct and indirect observations are used by scientists to study the natural world and universe. Identify questions and concepts that guide scientific investigations. Formulate and revise explanations and models using logic and evidence. Recognize and analyze alternative explanations and models.</p>	<p>above the sun's surface.</p> <p>Lesson 4</p> <ul style="list-style-type: none"> Describe the characteristics that the inner planets have in common. Identify the main characteristics that distinguish each of the inner planets <p>Lesson 5</p> <ul style="list-style-type: none"> Describe characteristics that the gas giants have in common. Identify characteristics that distinguish each outer planet. <p>Lesson 6</p> <ul style="list-style-type: none"> Explain how scientists classify small bodies in the solar system. 		
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Explain the importance of accuracy and precision in making valid measurements.

S7.D.3.1.1
Describe the patterns of Earth's rotation and revolution in relation to the Sun and Moon (i.e., solar eclipse, lunar eclipse, phases of the Moon, and time).

S7.D.3.1.2
Explain how gravity is the essential force in determining the motions of the planets and other objects in the solar system.

S7.D.3.1.3
Compare the properties and conditions of objects in the solar system to those of Earth.

S7.D.3.1.4
Identify and describe instruments that are used to study the universe (e.g., telescope, probes, satellites, space observatories).

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.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)

S8.D.3.1.2

				Describe the role of gravity as the force that governs the movement of the solar system and universe. S8.D.3.1.3 Compare and contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).			
Chapter 16 Stars, Galaxies, and the Universe (2-3 Weeks)	<p>Lesson 1</p> <ul style="list-style-type: none"> Telescopes are instruments that collect and focus light and other forms of electromagnetic radiation. <p>Lesson 2</p> <ul style="list-style-type: none"> Since the numbers that astronomers use are often very large, they have developed larger scale such as light-year. <p>Lesson 3</p> <ul style="list-style-type: none"> Characteristics used to classify stars include color, temperature, size, composition, and brightness. <p>Lesson 4</p> <ul style="list-style-type: none"> A star is born when the contracting gas and dust from a nebula become so dense and hot that nuclear fusion starts. How long a star lives depends on its mass. <p>Lesson 5</p> <ul style="list-style-type: none"> Most stars are members of groups of two or 	<p>7. Telescopes</p> <p>8. The scale of the universe</p> <p>9. Characteristics of stars</p> <p>10. Lives of stars</p> <p>11. Star systems and galaxies</p> <p>12. The expanding universe</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> What are the regions of the electromagnetic spectrum? What are telescopes and how do they work? <p>Lesson 2</p> <ul style="list-style-type: none"> How do astronomers measure distances to the stars? How do astronomers describe the scale of the universe? <p>Lesson 3</p> <ul style="list-style-type: none"> How are stars classified? What is an H-R diagram and how do astronomers use it? <p>Lesson 4</p> <ul style="list-style-type: none"> How a star form and what determines its life span? What happens to a star when it runs out of fuel? <p>Lesson 5</p> <ul style="list-style-type: none"> What is a star system? 	<p>3.3.7.B1</p> <p>Explain how gravity is the major force in the formation of the planets, stars, and the solar system.</p> <p>Describe gravity as a major force in determining the motions of planets, stars, and the solar system.</p> <p>Compare and contrast properties and conditions of objects in the solar system to those on Earth.</p> <p>3.3.7.B2</p> <p>SCALE AND MEASUREMENT</p> <p>Identify a variety of instruments used to gather evidence about the universe.</p> <p>PATTERNS</p> <p>Describe repeating patterns in the Sun-Earth-Moon system and the positions of stars.</p> <p>SCALE</p> <p>Relate planetary size and distance in our solar system using an appropriate scale model.</p> <p>3.3.7.B3</p> <p>Understand how theories are developed. Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions. Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. Describe relationships using inference and prediction. Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and</p>	<p>Lesson 1</p> <ul style="list-style-type: none"> State the regions of the electromagnetic spectrum. Explain what telescopes are and how they work. <p>Lesson 2</p> <ul style="list-style-type: none"> Describe how astronomers measure distances to the stars. Explain how astronomers describe the scale of the universe. <p>Lesson 3</p> <ul style="list-style-type: none"> Explain how stars are classified. Explain the H-R diagram, and explain how astronomers use it. <p>Lesson 4</p> <ul style="list-style-type: none"> Summarize the life cycle of stars. Describe what happens to a star when it runs out of fuel. <p>Lesson 5</p> <ul style="list-style-type: none"> Define a star. Identify the major types of galaxies. 	<p>Students will be given the following: Preferential seating when applicable</p> <p>Study guides</p> <p>Guided notes when applicable</p> <p>Extended time for assignment when needed</p> <p>Separate testing environment when applicable.</p>	<p>Daily assessments</p> <p>End of chapter exams</p> <p>Labs and projects</p>

	<p>more stars called star systems.</p> <p>Lesson 6</p> <ul style="list-style-type: none"> • According to the Big Bang Theory, the universe formed in an instant, billions of years ago, in an enormous explosion. 		<ul style="list-style-type: none"> • What are the major types of galaxies? <p>Lesson 6</p> <ul style="list-style-type: none"> • What does the Big Bang Theory say about the universe? 	<p>allows scientists to analyze and quantify results of investigations.</p> <p>Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories.</p> <p>Analyze alternative explanations and understanding that science advances through legitimate skepticism.</p> <p>Use mathematics in all aspects of scientific inquiry.</p> <p>Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.</p> <p>3.3.8.B1 Explain how light, measured remotely, can be used to classify objects in the universe.</p> <p>.3.8.B2 SCALE AND MEASUREMENT Explain measurements and evidence indicating the age of the universe.</p> <p>3.3.8.B3 Compare and contrast scientific theories. Know that both direct and indirect observations are used by scientists to study the natural world and universe. Identify questions and concepts that guide scientific investigations. Formulate and revise explanations and models using logic and evidence. Recognize and analyze alternative explanations and models. Explain the importance of accuracy and precision in making valid measurements.</p> <p>3.3.B Origin and Evolution of the Universe</p> <p>S7.D.3.1.1 Describe the patterns of Earth's rotation and revolution in relation to the Sun and Moon (i.e., solar eclipse, lunar eclipse, phases of the Moon, and time).</p> <p>S7.D.3.1.2</p>	<p>Lesson 6</p> <ul style="list-style-type: none"> • State what the big bang theory says about the universe. 		
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Explain how gravity is the essential force in determining the motions of the planets and other objects in the solar system.

S7.D.3.1.3

Compare the properties and conditions of objects in the solar system to those of Earth.

S7.D.3.1.4

Identify and describe instruments that are used to study the universe (e.g., telescope, probes, satellites, space observatories).

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.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)

S8.D.3.1.2

Describe the role of gravity as the force that governs the movement of the solar system and universe.

S8.D.3.1.3

Compare and contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).