

CP General Science

Huntingdon Area School District

UNITS (29/29 SELECTED)

SUGGESTED DURATION

 Unit 1: The Nature of Science	10 lessons
 Unit 2: Introduction to Earth Science	9 lessons
 Unit 3.1: Beyond Earth: Sun-Earth-Moon Systems	3 lessons
 Unit 3.2: Beyond Earth: Our Solar System	6 lessons
 Unit 3.3: Beyond Earth: Stars	5 lessons
 Unit 3.4: Beyond Earth: Galaxies and Universe	4 lessons
 Unit 4.1: Composition of Earth: Matter and Change	6 lessons
 Unit 4.2: Composition of Earth: Minerals	3 lessons
 Unit 4.3: Composition of Earth: Rocks	6 lessons
 Unit 5.1: Surface Processes on Earth: Weathering, Erosion, and Soil	4 lessons
 Unit 5.2: Surface Processes of Earth: Water	5 lessons
 Unit 5.3: SUPPLEMENTAL: Surface Processes on Earth: Mass Movements, Wind and Glaciers	1 lesson
 Unit 6.1: Atmosphere and Oceans: Atmosphere	4 lessons
 Unit 6.2: Atmosphere and Oceans: Weather and the Nature of Storms	5 lessons
 Unit 6.3: Atmosphere and Oceans: Climate	5 lessons
 Unit 6.4: SUPPLEMENTAL 1: Atmosphere and Oceans: Meteorology	1 lesson
 Unit 6.5: SUPPLEMENTAL 2: Atmosphere and Oceans: Earth's Oceans	1 lesson
 Unit 7.1: Dynamic Earth: Plate Tectonics	4 lessons
 Unit 7.2: Dynamic Earth: Volcanism	2 lessons
 Unit 7.3: Dynamic Earth: Earthquakes	3 lessons
 Unit 7.4: SUPPLEMENTAL: Dynamic Earth: Mountain Building	1 lesson
 Unit 8.1: Geologic Time: Fossils and the Rock Record	2 lessons
 Unit 8.2: Geologic Time: Geologic Time Scale	2 lessons
 Unit 9.1: Resources and the Environment: Earth's Resources	10 lessons
 Unit 9.2: Resources and the Environment: Renewable and Nonrenewable Resources	10 lessons
 Unit 9.3: Resources and the Environment: Human Impact on Resources	10 lessons
 Unit 10: Human Impact on the Environment: Waste and Waste Disposal	5 lessons
 Unit 11: Watersheds and Wetlands	15 lessons
 Unit 12: Ecosystems and Their Interactions	20 lessons

Unit 1: The Nature of Science

CP General Science

UNIT OVERVIEW

Students will work to answer, "How are science and technology used to answer questions and solve problems?"

ATTACHMENTS

 Nature_of_Science_SEPs.png

STANDARDS/EXPECTATIONS

BIG IDEAS

Big Ideas

- Students will explore the tools and methods of science.
- Students will explore units and measurement.
- Students will explore how graphs present information.
- Students will explore technology as the application of science.

ESSENTIAL QUESTIONS

Focus Questions

- What are the steps of the methods of science?
- Which units are used when measuring length, volume, mass, electricity, and temperature?
- When would you use a bar graph, line graph, pie chart?
- How does society affect the technology that we use (including the use of AI)?

Unit 1: The Nature of Science

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Metric System	Read and preform metric measurements and conversions
Scientific Method	Develop and conduct investigations throughout the year that will help to gather information and answer testable questions.
Experimental Design	Use the experimental design process to create solutions to identified problems.
Graphing	Analyze, interpret, and create graphs using and representing data.
Dependent and Independent Variables	Identify dependent and independent variables in investigations.

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Quizzes	Summative	
Grading of labs/activities	Formative	

Unit 2: Introduction to Earth Science

CP General Science

UNIT OVERVIEW

Students will work to answer the question, "How are maps important to understanding Earth?"

ATTACHMENTS

 Module_1_Intro_to_ES_.png

STANDARDS/EXPECTATIONS

BIG IDEAS

Big Ideas

- Students will explore the scope, importance and systems of Earth science.
- Students will explore the information used to make maps.
- Students will explore some of the advanced technology used to make maps.

ESSENTIAL QUESTIONS

Focus Questions

- How are maps important to understanding Earth?
- What can maps tell us about our world?
- How do we use maps to understand Earth?
- What tools do we use to map Earth?

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the scope, importance and systems of Earth science	Understand that Earth scientists use a variety of scientific practices to study the world around them.
Students will explore the information used to make maps	Understand the critical role that maps play in understanding Earth.
Students will explore some of the advanced technology used to make maps	Understand the importance of technology in modern cartography.

Unit 2: Introduction to Earth Science

CP General Science

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
Graded labs	Formative	
McGraw Hill: Lesson Check	Summative	

Unit 3.1: Beyond Earth: Sun-Earth-Moon Systems

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How is space different from the planet we call home?"

Students will work to answer the question, "Why doesn't the Moon eclipse the Sun every month?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.A

3.3.9-12.B

3.3.9-12.C

3.3.9-12.D

3.3.9-12.G

3.3.9-12.H

3.3.9-12.E

3.3.9-12.K

BIG IDEAS

Big Ideas

- Students will explore the tools and methods of astronomy.
- Students will explore the Moon.
- Students will explore the movements of the Sun, Moon, and Earth relative to each other.

ESSENTIAL QUESTIONS

Focus Questions

- Why doesn't the Moon eclipse the Sun every month?
- How do we track objects in space?
- What is the "Man in the Moon?"
- What causes a solar eclipse?

Unit 3.1: Beyond Earth: Sun-Earth-Moon Systems

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the tools and methods of astronomy.	Understand the tools used to track the movement of the Sun, Moon and Earth.
Students will explore the Moon	Understand the history and formation of the Moon.
Students will explore the movements of the Sun, Moon, and Earth relative to each other	Understand how the geometry of the Moon's and Earth's orbits affect the frequency and appearance of eclipses.

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	
Graded Labs	Formative	

Unit 3.2: Beyond Earth: Our Solar System

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How is space different from the planet we call home?"

Students will work to answer the question, "Why do we have to use satellites to take detailed pictures of Jupiter and the other planets?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.A

3.3.9-12.D

3.3.9-12.G

3.3.9-12.K

3.3.9-12.N

BIG IDEAS

Big Ideas

- Students will explore the formation, scale, and motion of objects in our solar system.
- Students will explore the terrestrial planets.
- Students will explore the gas giant planets.
- Students will explore dwarf planets and other solar system bodies.

ESSENTIAL QUESTIONS

Focus Questions

- Why do we have to use satellites to take detailed pictures of Jupiter and the other planets?
- Why do planets move the way they do?
- How did we see through Venus's thick atmosphere?
- How did we get close enough to take pictures of Neptune?
- Why is Pluto no longer classified as a planet?

Unit 3.2: Beyond Earth: Our Solar System

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the formation, scale, and motion of objects in our solar system	Understand that, despite their size, the planets are very far apart.
Students will explore the terrestrial planets.	Understand that spacecraft were needed to explore even the closest planets to Earth.
Students will explore the gas giant planets.	Understand that any satellite sent to research the outer solar system is assisted by Jupiter's gravity
Students will explore dwarf planets and other solar system bodies.	Understand that trans-Neptunian objects are so small and distant that they have been hard to find up until the early 2000's

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	
McGraw Hill: Elaborate	Formative	

Unit 3.3: Beyond Earth: Stars

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How is space different from the planet we call home?"

Students will work to answer the question, "How to telescopes tell us what elements are in the stars?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.A

3.3.9-12.B

3.3.9-12.C

3.3.9-12.D

BIG IDEAS

Big Ideas

- Students will explore emission and absorption spectra and the structure of the Sun.
- Students will explore the measurement and classification of stars.
- Students will explore the life cycle of stars.

ESSENTIAL QUESTIONS

Focus Questions

- How do telescopes tell us what elements are in stars?
- What is inside the Sun?
- How do we know anything about stars that are hundreds of light-years away?
- What happens to the elements in a star when it dies?

Unit 3.3: Beyond Earth: Stars

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore emission and absorption spectra and the structure of the Sun.	Understand that the composition of distant objects can be determined by their emission and absorption spectra.
Students will explore the measurement and classification of stars.	Understand that spectra can be used to determine the speed of stars.
Students will explore the life cycle of stars.	Understand that the size of the star determines what elements are created in it.

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 3.4: Beyond Earth: Galaxies and Universe

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How is space different from the planet we call home?"

Students will work to answer the question, "Why did it take so long to discover other galaxies?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.A

3.3.9-12.B

3.3.9-12.C

3.3.9-12.D

3.3.9-12.G

BIG IDEAS

Big Ideas

- Students will explore the Milky Way Galaxy.
- Students will explore the structure of galaxies and galaxy clusters.
- Students will explore the origin and demise of the universe.

ESSENTIAL QUESTIONS

Focus Questions

- Where are we in the galaxy?
- How did we discover there were objects outside our galaxy?
- What are the ideas about how the universe began?

Unit 3.4: Beyond Earth: Galaxies and Universe

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the Milky Way Galaxy.	Understand almost all of the objects in the night sky that we can see with their naked eyes are in our galaxy.
Students will explore the structure of galaxies and galaxy clusters.	Understand that Edwin Hubble discovered other galaxies are much farther away than the stars in our galaxy.
Students will explore the origin and demise of the universe.	Understand that we needed ways to measure the microwave radiation to discover the history of the universe.

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
Project	Summative	

Unit 4.1: Composition of Earth: Matter and Change

CP General Science

UNIT OVERVIEW

Unit Driving Question: "What conditions are needed to grow large crystals?"

Students will work to answer the question, "How do we find and remove harmful substances from our drinking water?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.A

3.3.9-12.B

3.3.9-12.K

3.3.9-12.L

BIG IDEAS

Big Ideas

- Students will explore atoms, isotopes, and ions.
- Students will explore how atoms, molecules, and compounds combine to form new molecules or compounds.
- Students will explore the different states of matter, and how matter can change from one state to another.

ESSENTIAL QUESTIONS

Focus Questions

- What is water made of?
- Why does water readily mix with other chemicals?
- What forms does water take?

Unit 4.1: Composition of Earth: Matter and Change

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore atoms, isotopes, and ions.	Understand the building blocks of water and the substances that can be found in it.
Students will explore how atoms, molecules, and compounds combine to form new molecules or compounds.	Understand how water is made
Students will explore the different states of matter, and how matter can change from one state to another.	Understand that water can exist in many different states and still be water

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Ticket in	Formative	
Exit Tickets	Formative	
Module 2 Exam	Summative	
Graded Lab	Formative	

Unit 4.2: Composition of Earth: Minerals

CP General Science

UNIT OVERVIEW

Unit Driving Question: "What conditions are needed to grow large crystals?"

Students will work to answer the question, "What gives diamonds their unique properties?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.J

3.3.9-12.H

3.3.9-12.K

3.3.9-12.O

3.3.9-12.P

3.3.9-12.Q

3.3.9-12.R

BIG IDEAS

Big Ideas

- Students will explore the characteristics and properties of minerals.
- Students will explore different types of minerals.

ESSENTIAL QUESTIONS

Focus Questions

- What makes diamonds so special?
- What properties does diamond have?
- Why are diamond and graphite so different when they are made of the same element?

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the characteristics and properties of minerals.	Understand that minerals, such as diamonds, have unique properties.
Students will explore the different types of minerals.	Understand how minerals are categorized and how some minerals are used.

Unit 4.2: Composition of Earth: Minerals

CP General Science

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	
McGraw Hill: Elaborate	Formative/Summative	

Unit 4.3: Composition of Earth: Rocks

CP General Science

UNIT OVERVIEW

Unit Driving Question: "What conditions are needed to grow large crystals?"

Students will work to answer the question, "How do rocks transform from one type to another?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.H

3.3.9-12.J

3.3.9-12.K

3.3.9-12.O

3.3.9-12.P

3.3.9-12.Q

3.3.9-12.R

BIG IDEAS

Big Ideas

- Students will explore what igneous rocks are, how they form, what their compositions are, and some of their uses.
- Students will explore what sedimentary rocks are, how they form, what their compositions are, and what their features are.
- Students will explore what metamorphic rocks are, how they form, what their features are, and why they are economically important.

ESSENTIAL QUESTIONS

Focus Questions

- How did different rocks form?
- How do rocks form from magma?
- How do rocks become sediment?
- How can we tell when a rock has been transformed?

Unit 4.3: Composition of Earth: Rocks

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore what igneous rocks are, how they form, what their compositions are, and some of their uses.	Understand that igneous rocks are one type of rock and how they are made
Students will explore what sedimentary rocks are, how they form, what their compositions are, and what their features are	Understand that sedimentary rocks are one type of rock and how they are made from other rocks
Students will explore what metamorphic rocks are, how they form, what their features are, and why they are economically important	Understand that metamorphic rocks are one type of rock and how they are made from other rocks

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	
McGraw Hill: Elaborate	Summative/Formative	

Unit 5.1: Surface Processes on Earth: Weathering, Erosion, and Soil

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do natural processes shape the surface of Earth?"

Students will work to answer the questions, "How does ice carve large valleys out of mountain rock?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.G

3.3.9-12.H

3.3.9-12.J

3.3.9-12.N

3.3.9-12.O

3.3.9-12.Q

BIG IDEAS

Big Ideas

- Students will explore mechanical and chemical weathering, and what affects the rate at which it occurs.
- Students will explore erosion and deposition.
- Students will explore soil formation and soil characteristics.

ESSENTIAL QUESTIONS

Focus Questions

- How do natural processes shape the surface of the Earth?
- How does ice carve large valleys out of mountain rock?
- How does ice help rock break down?
- How does erosion done by ice differ from erosion done by water?
- How does eroded rock become soil?

Unit 5.1: Surface Processes on Earth: Weathering, Erosion, and Soil

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore mechanical and chemical weathering, and what affects the rate at which it occurs.	Understand that ice is a powerful weathering force
Students will explore erosion and deposition.	Understand that glaciers are made of ice that erodes rock
Students will explore soil formation and soil characteristics.	Understand what eventually happens to the rock that glaciers remove

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit tickets	Formative	
Module Exam	Summative	
Graded Lab	Formative	
McGraw Hill: Lesson Check	Summative	
McGraw Hill:		

Unit 5.2: Surface Processes of Earth: Water

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do natural processes shape the surface of Earth?"

Students will work to answer the question, "How does groundwater get into underground caves?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.J

3.3.9-12.L

3.3.9-12.O

BIG IDEAS

Big Ideas

- Students will explore how water moves across Earth's surface.
- Students will explore streams, lakes and wetlands.
- Students will explore groundwater movement and storage.
- Students will explore the interactions between groundwater and rocks.

ESSENTIAL QUESTIONS

Focus Questions

- How does rain water get into underground caves?
- What happens to surface water that does not soak into the ground?
- How does surface water interact with the land?
- How does water flow through rock?
- How does groundwater interact with the land?

Unit 5.2: Surface Processes of Earth: Water

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore how water moves across Earth's surface.	Understand how water is absorbed into the soil
Students will explore streams, lakes, and wetlands.	Understand what happens to the water that is not absorbed into the ground.
Explore groundwater movement and storage.	Understand how water moves through rock
Explore the interactions between groundwater and rocks	Understand that groundwater creates caves and cave features

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
Graded Lab	Formative	
McGraw Hill: Lesson Check	Summative	

Unit 5.3: SUPPLEMENTAL: Surface Processes on Earth: Mass Movements, Wind and Glaciers

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do natural processes shape the surface of Earth?"

Students will work to answer the question, "What dangers do mass movements and erosion pose to people?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.H

3.3.9-12.J

3.3.9-12.N

3.3.9-12.O

3.3.9-12.P

3.3.9-12.Q

3.3.9-12.R

BIG IDEAS

Big Ideas

- Students will what mass movements are, the differences between the types, and their effects.
- Students will explore wind erosion and deposition.
- Students will explore types of glaciers and glacial erosion and deposition.

ESSENTIAL QUESTIONS

Focus Questions

- What dangers do mass movements and erosion pose to people?
- What can we do to reduce the risks that mass movements pose to people?
- How do human activities affect wind erosion?
- What happens to the rock that is carved out of landscapes by glaciers?

Unit 5.3: SUPPLEMENTAL: Surface Processes on Earth: Mass Movements, Wind and Glaciers

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will what mass movements are, the differences between the types, and their effects.	Understand how people are affected by mass movement
Students will explore wind erosion and deposition.	Understand how people are affected by wind
Students will explore types of glaciers and glacial erosion and deposition.	Understand how people are affected by glaciers

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 6.1: Atmosphere and Oceans: Atmosphere

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the ocean and the atmosphere interact?"

Students will work to answer the question, "How do clouds and mist form?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.A

3.3.9-12.J

3.3.9-12.H

3.3.9-12.E

3.3.9-12.L

3.3.9-12.N

3.3.9-12.M

BIG IDEAS

Big Ideas

- Students will explore the structure and composition of the atmosphere.
- Students will explore air pressure, temperature, and humidity.
- Students will explore the types and formation of clouds and precipitation.

ESSENTIAL QUESTIONS

Focus Questions

- How do clouds and mist form?
- Where in the atmosphere do clouds form?
- How do water vapor and the atmosphere interact?
- What is needed to form clouds?

Unit 6.1: Atmosphere and Oceans: Atmosphere

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the structure and composition of the atmosphere.	Understand how clouds get the energy to form
Students will explore air pressure, temperature, and humidity.	Understand how these properties interact to form clouds
Students will explore the types and formation of clouds and precipitation.	Understand how clouds form

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	

Unit 6.2: Atmosphere and Oceans: Weather and the Nature of Storms

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the ocean and the atmosphere interact?"

Students will work to answer the question, "Why do only some thunderstorms produce tornadoes?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.J

3.3.9-12.E

3.3.9-12.L

3.3.9-12.O

3.3.9-12.M

BIG IDEAS

Big Ideas

- Students will explore the structure and creation of thunderstorms.
- Students will explore severe thunderstorms.
- Students will explore the formation, structure, and effects of tropical cyclones.
- Students will explore flood, heat waves, and other recurrent weather.

ESSENTIAL QUESTIONS

Focus Questions

- Why is predicting the weather so difficult?
- Why do only some thunderstorms produce tornadoes?
- What does a thunderstorm need to grow?
- How does heat make storms more powerful?
- Why are hurricanes so powerful?
- How does heat make droughts more extreme?

Unit 6.2: Atmosphere and Oceans: Weather and the Nature of Storms

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the structure and creation of thunderstorms.	Understand the conditions necessary for thunderstorms
Students will explore severe thunderstorms	Understand how tornadoes are formed
Students will explore the formation, structure, and effects of tropical cyclones.	Understand how storm systems can have winds that are comparable to tornadoes.
Students will explore flood, heat waves, and other recurrent weather.	Understand that not all major weather damage is caused by sudden events like tornadoes

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	

Unit 6.3: Atmosphere and Oceans: Climate

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the ocean and the atmosphere interact?"

Students will work to answer the question, "What is climate?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.E

3.3.9-12.S

3.3.9-12.M

BIG IDEAS

Big Ideas

- Students will explore the causes of climate.
- Students will explore the properties of climates and how to classify them
- Students will explore the natural processes that drive climatic patterns and changes.
- Students will explore how human activities affect the Earth's climates.
- Students will explore the human health implications of a warmer climate

ESSENTIAL QUESTIONS

Focus Questions

- What is climate?
- What is the difference between climate and weather?
- How does climate affect what grows in a region?
- How does climate change naturally?
- How is modern climate change different from natural climate change?
- What are the human health implications of a warmer climate?

Unit 6.3: Atmosphere and Oceans: Climate

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the causes of climate.	Understand how climate differs from weather
Students will explore the properties of climates and how to classify them	Understand how to describe climates
Students will explore the natural processes that drive climatic patterns and changes.	Understand that the process that changes the amount of sunlight received by Earth also changes Earth's climate
Students will explore how human activities affect the Earth's climates.	Understand that human activities are changing the atmosphere's composition and causing the anomalous increase in average global temperatures over the last century
Students will explore the human health implications of a warmer climate	Understand that in a warming climate, the health of humans can be impacted

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	

Unit 6.4: SUPPLEMENTAL 1: Atmosphere and Oceans: Meteorology

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the ocean and the atmosphere interact?"

Students will work to answer the question, "How do satellites help us to track and predict weather?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.E

3.3.9-12.M

BIG IDEAS

Big Ideas

- Students will explore air masses and the imbalanced heating of the Earth.
- Students will explore how wind and air masses interact to create weather.
- Students will explore the tools used to measure and track weather.
- Students will explore the methods and tools used to predict weather.

ESSENTIAL QUESTIONS

Focus Questions

- How do satellites help us to track and predict weather?
- How does heat drive weather?
- Why do winds blow in the direction they do?
- How do we gather information about the weather?
- Why is predicting the weather challenging?

Unit 6.4: SUPPLEMENTAL 1: Atmosphere and Oceans: Meteorology

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore air masses and the imbalanced heating of the Earth.	Understand where weather originates
Students will explore how wind and air masses interact to create weather.	Understand how to describe weather systems
Students will explore the tools used to measure and track weather.	Understand how satellites are used to measure and track weather
Students will explore the methods and tools used to predict weather	Understand how satellites provide information used in weather prediction

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	

Unit 6.5: SUPPLEMENTAL 2: Atmosphere and Oceans: Earth's Oceans

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the ocean and the atmosphere interact?"

Students will work to answer the question, "How can water carve a shoreline?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.J

3.3.9-12.H

3.3.9-12.L

3.3.9-12.O

3.3.9-12.P

BIG IDEAS

Big Ideas

- Students will explore the origin and properties of the oceans
- Students will explore the movement of water in the oceans
- Students will explore sea floor and shoreline features

ESSENTIAL QUESTIONS

Focus Questions

- How can water carve a shoreline?
- How did Earth gain its oceans?
- How does the land influence the ocean's movement?
- Why are all coasts not sandy beaches?

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the origin and properties of the oceans	Understand how the interaction between the ocean and land affects the ocean's composition
Students will explore the movement of water in the oceans	Understand how waves break along the shore
Students will explore sea floor and shoreline features	Understand how waves cut into and move sediment along the shorelines

Unit 6.5: SUPPLEMENTAL 2: Atmosphere and Oceans: Earth's Oceans

CP General Science

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets In	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	

Unit 7.1: Dynamic Earth: Plate Tectonics

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do rocks react under titanic pressure?"

Students will work to answer the question, "How do we know that this landmass is moving?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.J

3.3.9-12.H

3.3.9-12.I

BIG IDEAS

Big Ideas

- Students will explore the history of and evidence for continental drift.
- Students will explore how the ocean floor is mapped and what was discovered about ocean rocks and sediment.
- Students will explore the theory of plate tectonics and the differences between divergent, convergent, and transform boundaries.
- Students will explore how convection and density are related to the movements of tectonic plates.

ESSENTIAL QUESTIONS

Focus Questions

- How do we know that this landmass is moving?
- How do we know that the continents have moved?
- Why does the seafloor spread?
- Why do earthquakes only happen in some places?
- What makes tectonic plates move?

Unit 7.1: Dynamic Earth: Plate Tectonics

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore the history of and evidence for continental drift.	Understand the theory behind continental drift
Students will explore how the ocean floor is mapped and what was discovered about ocean rocks and sediment.	Understand how magnetism gives evidence of seafloor spreading
Students will explore the theory of plate tectonics and the differences between divergent, convergent, and transform boundaries.	Understand what happens at plate edges when they move
Students will explore how convection and density are related to the movements of tectonic plates.	Understand the forces behind continents moving

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	
Graded Lab	Formative	

Unit 7.2: Dynamic Earth: Volcanism

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do rocks react under titanic pressure?"

Students will work to answer the question, "Where does lava come from?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.J

3.3.9-12.H

3.3.9-12.I

3.3.9-12.O

BIG IDEAS

Big Ideas

- Students will explore where volcanoes happen, the parts of a volcano, and the types of volcanoes
- Students will explore how magma is made, what it is made of, the types of magma, and types of eruptions possible.
- Students will explore plutons and tectonics.

ESSENTIAL QUESTIONS

Focus Questions

- Where does lava come from?
- Where do we find most of the volcanoes?
- Why do only some volcanoes explode?
- What happens to the magma that doesn't make it to the surface?

Unit 7.2: Dynamic Earth: Volcanism

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

- Students will explore how magma is made, what it is made of, the types of magma, and types of eruptions possible.

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore where volcanoes happen, the parts of a volcano, and the types of volcanoes	Understand the processes associated with the discharge of magma, known as lava once it reaches Earth's surface
Students will explore how magma is made, what it is made of, the types of magma, and types of eruptions possible.	Understand where lava comes from and what it is made of
Students will explore plutons and tectonics.	Understand what happens if magma fails to become lava

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 7.3: Dynamic Earth: Earthquakes

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do rocks react under titanic pressure?"

Students will work to answer the question, "How can we prevent people from getting hurt during an earthquake?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.H

3.3.9-12.J

3.3.9-12.I

3.3.9-12.O

BIG IDEAS

Big Ideas

- Students will explore stress and strain, faults, and types of seismic waves
- Students will explore seismometers and seismograms and what they can tell us about Earth's interior
- Students will explore earthquake magnitude and intensity, how to locate and earthquake, and where earthquakes are most likely to happen.
- Students will explore earthquake hazards and earthquake forecasting

ESSENTIAL QUESTIONS

Focus Questions

- How can we prevent people from getting hurt during an earthquake?
- What causes earthquakes?
- What tools do we have to study earthquakes?
- How do we find where an earthquake has happened?
- Can we predict when an earthquake will happen?

Unit 7.3: Dynamic Earth: Earthquakes

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore stress and strain, faults, and types of seismic waves	Understand the types of waves that cause the most damage in an earthquake
Students will explore seismometers and seismograms and what they can tell us about Earth's interior	Understand how earthquake waves are detected
Students will explore earthquake magnitude and intensity, how to locate an earthquake, and where earthquakes are most likely to happen.	Understand how earthquakes are rated, found and where they will probably occur
Students will explore earthquake hazards and earthquake forecasting	Understand that seismologists are working on ways to forecast earthquakes to minimize damage and death

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 7.4: SUPPLEMENTAL: Dynamic Earth: Mountain Building

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do rocks react under titanic pressure?"

Students will work to answer the question, "How do mountains grow so large?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.H

3.3.9-12.J

BIG IDEAS

Big Ideas

- Students will explore Earth's topography and isostasy
- Students will explore mountain building at convergent boundaries
- Students will explore divergent-boundary, uplifted, and fault-block mountain building

ESSENTIAL QUESTIONS

Focus Questions

- How do mountains grow so large?
- Why does continental crust sit higher on Earth's surface than oceanic crust?
- How were the Appalachian Mountains formed?
- How do mountains that aren't on plate boundaries form?

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore Earth's topography and isostasy	Understand that large mountains have large roots
Students will explore mountain building at convergent boundaries	Understand how mountains are created at convergent boundaries
Students will explore divergent-boundary, uplifted, and fault-block mountain building	Understand how mountains are formed when they are not at a convergent boundary

Unit 7.4: SUPPLEMENTAL: Dynamic Earth: Mountain Building

CP General Science

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 8.1: Geologic Time: Fossils and the Rock Record

CP General Science

UNIT OVERVIEW

Unit Driving Question: How do we know what happened on Earth Millions of years ago?"

Students will work to answer the question, "How has information about Earth's history been preserved for so long?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.F

3.3.9-12.G

3.3.9-12.J

3.3.9-12.H

3.3.9-12.K

BIG IDEAS

Big Ideas

- Students will explore how time is organized by the geologic time scale
- Students will explore the principles for determining the relative age of rocks
- Students will explore how to do radiometric and other types of dating
- Students will explore the fossil record

ESSENTIAL QUESTIONS

Focus Questions

- How has information about Earth's history been preserved for so long?
- Why do we need a geologic time scale?
- How do we know one rock layer is older than another?
- How can we measure how old a rock is?
- How do living things become fossils?

Unit 8.1: Geologic Time: Fossils and the Rock Record

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore how time is organized by the geologic time scale	Understand how far back Earth's history goes
Students will explore the principles for determining the relative age of rocks	Understand that much information is gained from studying the order in which events occurred
Students will explore how to do radiometric and other types of dating	Understand Earth's history is captured by rock, trees, and ice
Students will explore the fossil record	Understand that the preserved remains or traces of once-living organisms provide evidence of the past

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 8.2: Geologic Time: Geologic Time Scale

CP General Science

UNIT OVERVIEW

Unit Driving Question: How do we know what happened on Earth Millions of years ago?"

Students will work to answer the question, "How was the pre-historic dragonfly shown to you different from a modern-day dragonfly?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.G

3.3.9-12.H

3.3.9-12.N

BIG IDEAS

Big Ideas

- Students will explore evidence of early Earth.
- Students will explore the formation of the atmosphere
- Students will explore Paleozoic paleogeography, sea-level changes, mountain building, and life.
- Students will explore Mesozoic paleogeography, mountain building, and life
- Students will explore Cenozoic paleogeography, mountain building, and life

ESSENTIAL QUESTIONS

Focus Questions

- How was the pre-historic dragonfly shown to you different from a modern-day dragonfly?
- What did Earth look like in the beginning?
- What was the first life on Earth?
- Why were there so many mass extinctions in the Paleozoic era?
- How did dinosaurs become so prevalent in the Mesozoic era?
- How did the ice ages affect life in the Cenozoic era?

Unit 8.2: Geologic Time: Geologic Time Scale

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore evidence of early Earth	Understand that the early Earth was much different than the current Earth
Students will explore the formation of the atmosphere	Understand how early Earth would not support current life
Students will explore Paleozoic paleogeography, sea-level changes, mountain building, and life.	Understand that the Paleozoic Earth was very different from current Earth
Students will explore Mesozoic paleogeography, mountain building, and life	Understand that, with the appearance of mammals, birds, conifers, and flowering plants, Mesozoic life has similarities to current Earth
Students will explore Cenozoic paleogeography, mountain building, and life	Understand that mammals dominate in the current era, becoming the animals that we know today

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 9.1: Resources and the Environment: Earth's Resources

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the natural environment and human activities affect each other?"

Students will work to answer the question, "What happened to the lake in the picture provided?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.G

3.3.9-12.H

3.3.9-12.I

3.3.9-12.E

3.3.9-12.K

3.3.9-12.L

3.3.9-12.O

3.3.9-12.P

3.3.9-12.Q

BIG IDEAS

Big Ideas

- Students will explore renewable and nonrenewable resources
- Students will explore resources found in Earth's crust
- Students will explore the atmosphere as a resource
- Students will explore freshwater resources and their use
- Students will explore the resource options we have to meet our energy needs

ESSENTIAL QUESTIONS

Focus Questions

- "What happened to the lake in the picture provided?"
- What makes something a renewable resource?
- Why are mineral deposits only found in some areas?
- How is the atmosphere a resource?
- How do we get water to people in areas affected by shortages?
- Why do people use different resources for their energy?

Unit 9.1: Resources and the Environment: Earth's Resources

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore renewable and nonrenewable resources	Understand that humans can consume a resource faster than it can be replenished
Students will explore resources found in Earth's crust	Understand that there is an uneven distribution of resources on Earth
Students will explore the atmosphere as a resource	Understand how the disappearance of the lake would affect the carbon and nitrogen cycles in the atmosphere
Students will explore freshwater resources and their use	Understand how using water faster than it can be replenished will create a shortage
Students will explore the resource options we have to meet our energy needs	Understand that we have options to mitigate the loss of nonrenewable resources

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	
McGraw Hill: Lesson Check	Summative	
McGraw Hill: Elaborate	Summative/Formative	

Unit 9.2: Resources and the Environment: Renewable and Nonrenewable Resources

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How does human use of renewable and nonrenewable energies impact the ecosystem?"

Students will work to answer the following questions:

"How does society's demand for energy impacted our use of renewable and nonrenewable energies?"

"What actions can I take (choices can I make) to more sustainably use resources?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.4.9-12.G

3.4.9-12.H

3.4.9-12.I

3.4.9-12.D

BIG IDEAS

Big Ideas

- Students will explore what composting is and the types of composting.
- Students will explore and identify differences and types of renewable and nonrenewable energies
- Students will explore and explain how renewable and nonrenewable energies are used to produce electricity.
- Students will identify, explore and explain fossil fuels and their formations (with their connection to Pennsylvania)

ESSENTIAL QUESTIONS

Focus Questions

- How does society's demand for energy impacted our use of renewable and nonrenewable energies?
- What actions can I take (choices can I make) to more sustainably use
- What is composting?
- What are the types of renewable and nonrenewable resources?
- How are fossil fuels formed?
- How do fossil fuels contribute to Pennsylvania's history and economy?
- How are renewable and nonrenewable energy resources used to make electricity?

Unit 9.2: Resources and the Environment: Renewable and Nonrenewable Resources

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore composting	Understand the difference between organic/inorganic and how to formulate healthy compost
Students will explore renewable and nonrenewable resources	Understand that renewable and nonrenewable natural resources are invaluable in supplying energy and materials used by people
Students will explore how electricity is created from renewable and nonrenewable resources	Understand how energy is produced from renewable and nonrenewable resources and explain advantages and disadvantages of each
Students will explore how fossil fuels are formed and how fossil fuels are important in Pennsylvania's history and economy	Understand how fossil fuels are formed and the connection of fossil fuels to the history and economy of Pennsylvania

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 9.3: Resources and the Environment: Human Impact on Resources

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do the natural environment and human activities affect each other?"

Students will work to answer the question, "Why would we grow and use seaweed instead of standard crops like rice and corn?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.3.9-12.L

3.3.9-12.O

3.3.9-12.P

3.3.9-12.Q

3.3.9-12.R

BIG IDEAS

Big Ideas

- Students will explore population growth and limits to such growth
- Students will explore the effect of land use on Earth.
- Students will explore the effects of human activity on the atmosphere
- Students will explore the effect of pollution and overuse on water resources
- Students will explore energy efficiency

ESSENTIAL QUESTIONS

Focus Questions

- "Why would we grow and use seaweed instead of standard crops like rice and corn?"
- What factors limit human population?
- How does agriculture affect the land?
- How will climate change affect me?
- How does growing seaweed help with water conservation?
- What can I do at home to be more energy efficient?

Unit 9.3: Resources and the Environment: Human Impact on Resources

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore population growth and limits to such growth	Understand that an increase in population requires an increasing amount of resources
Students will explore the effect of land use on Earth.	Understand that poor farming practices have a negative effect on land and water resources
Students will explore the effects of human activity on the atmosphere	Understand the effect of climate change on fertile land
Students will explore the effect of pollution and overuse on water resources	Understand that crop irrigation uses a lot of water
Students will explore energy efficiency	Understand that the current use of resources is unsustainable, and that new methods and energy resources are needed

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 10: Human Impact on the Environment: Waste and Waste Disposal

CP General Science

UNIT OVERVIEW

Unit Driving Question: "How do choices and behaviors of humans regarding the disposal of waste impact the environment?"

Students will work to answer these questions:

"What methods do we use to dispose waste?"

"What strategies can people take to reduce waste?"

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.4.9-12.G

3.4.9-12.H

BIG IDEAS

Big Ideas

- Students will explore methods used to dispose of solid waste
- Students will explore ways to reduce the amount of solid waste they get rid of

ESSENTIAL QUESTIONS

Focus Questions

- What methods do we use to dispose waste?
- What strategies can people take to reduce waste?
- How does solid waste disposal impact human health?
- How are municipal solid waste landfills and incinerators different?
- What are the types of composting?
- Why materials can be composted?
- What is the difference between recycling and upcycling?

Unit 10: Human Impact on the Environment: Waste and Waste Disposal

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore methods used to dispose of solid waste	Understand the different methods for disposal of solid waste (landfills and incinerators) and the reasons why proper disposal of solid waste is crucial for human health
Students will explore ways to reduce the amount of solid waste they get rid of	Understand how composting, composting and upcycling can decrease the amount of solid waste going to landfills and incinerators

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 11: Watersheds and Wetlands

CP General Science

UNIT OVERVIEW

Unit Driving Question: How do watersheds and wetlands function as interconnected systems that support, impact, and are influenced by living things?

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.4.9-12.A

3.4.9-12.B

3.4.9-12.C

3.4.9-12.D

3.4.9-12.E

BIG IDEAS

Big Ideas

- Watersheds and wetlands function as interconnected systems that support, impact, and are influenced by living things.

ESSENTIAL QUESTIONS

Focus Questions

- How do watersheds and wetlands function as interconnected systems that support, impact, and are influenced by living things?
- How do human actions impact the functions of watersheds and wetlands?

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore how watersheds and wetlands function as interconnected systems that support, impact, and are influenced by living things.	Understand the interconnected nature between systems in an ecosystem, including human impacts on the ecosystem

Unit 11: Watersheds and Wetlands

CP General Science

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	

Unit 12: Ecosystems and Their Interactions

CP General Science

UNIT OVERVIEW

Unit Driving Question: How do living things interact with their surroundings and impact ecological organizations of the Earth?

STANDARDS/EXPECTATIONS

Pennsylvania - Grade 9-12 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

3.4.9-12.B

3.1.9-12.H

3.1.9-12.I

3.1.9-12.J

3.1.9-12.K

3.1.9-12.L

3.1.9-12.M

3.1.9-12.N

3.1.9-12.O

3.1.9-12.V

3.1.9-12.W

3.1.9-12.X

BIG IDEAS

Big Ideas

- Students will explore how human cultures and societies experience and interact with the environment in various ways?
- Students will explore the complex systems that include both living (biotic) and non-living (abiotic) components that interact with each other.
- Students will explore the cycling of matter and the flow of energy within ecosystems that occurs through interactions among different organisms and between organisms and the physical environment.
- Students will explore the environment and populations of species change that result in changes in ecosystems
- Students will explore why many species live in groups, increasing the chances of survival for individuals and their relatives
- Students will explore the concept of when the environment changes, some individuals in a population may have traits that provide a reproductive advantage which over many generations can change the makeup of a population.

Unit 12: Ecosystems and Their Interactions

CP General Science

ESSENTIAL QUESTIONS

Focus Questions

- How do human cultures and societies experience, interact, and value local, regional and/or global environments
- How do various human cultures express their beliefs about nature and environment
- How are natural resources managed by people from various cultures and communities
- How do organisms interact with the living and nonliving environments to obtain matter and energy?
- How do matter and energy move through an ecosystem?
- How do environmental changes impact ecosystems?
- How do organisms interact in groups so as to benefit individuals?
- How does the environment influence populations of organisms over multiple generations?

Unit 12: Ecosystems and Their Interactions

CP General Science

LEARNING TARGETS: KNOWLEDGE & SKILLS

Knowledge	Skills
Students will know (Acquired Knowledge)	Students can do (Acquired Skill)
Students will explore how human cultures and societies experience and interact with the environment in various ways?	Understand the complex interactions between human cultures and societies in the environment
Students will explore the complex systems that include both living (biotic) and non-living (abiotic) components that interact with each other.	Understand how living and non-living components in an ecosystem interact to make an ecosystem stable or unstable
Students will explore the cycling of matter and the flow of energy within ecosystems that occurs through interactions among different organisms and between organisms and the physical environment.	Understand how energy and matter flow through the ecosystem to organisms in all levels
Students will explore the environment and populations of species change that result in changes in ecosystems	Understand how limiting factors influence populations and can change the number of individuals in the ecosystem (extinction)
Students will explore why many species live in groups, increasing the chances of survival for individuals and their relatives	Understand the complex relationships that exist in ecosystems to benefit individual members and the species as a whole
Students will explore the concept of when the environment changes, some individuals in a population may have traits that provide a reproductive advantage which over many generations can change the makeup of a population.	Understand how favorable traits allow the members to survive and how unfavorable traits will cause species to become extinct

Unit 12: Ecosystems and Their Interactions

CP General Science

EVIDENCE OF LEARNING & ASSESSMENT

Name of Assessment	Type (formative, summative, project-based, diagnostic)	Description
Tickets in	Formative	
Exit Tickets	Formative	
Module Exam	Summative	