

Mystery Science Alignment with the Pennsylvania Science Standards



Mystery Science is a hands-on curriculum that is fully aligned with Pennsylvania's Integrated Standards for Science, Technology & Engineering, and Environmental Literacy & Sustainability (STEELS).

Mystery Science's units of study contain:

- Hands-on, easy-prep activities with EVERY lesson
- Engaging, real-world investigative phenomena
- Thoughtful discussions to build background knowledge
- Lesson & unit assessments to evaluate comprehension
- Curated, cross-curricular extensions

Mystery Science also offers the Anchor Layer, which enriches the unit with an anchor phenomenon, incorporates anchor connections after each lesson, & concludes the unit with a performance task.

Kindergarten	Page 3	3rd Grade	Page 25
Life Science Animal Needs Plant Needs	Page 4	Life Science Fossils & Changing Environments Life Cycles Heredity, Survival, & Selection	Page 26
Earth & Space Science Severe Weather Weather Patterns	Page 6	Earth & Space Science Weather & Climate	Page 30
Physical Science Sunlight & Warmth Pushes & Pulls	Page 8	Physical Science Forces, Motion, & Magnets	Page 32
1st Grade	Page 11	4th Grade	Page 34
Life Science Animal Traits & Survival Plant Traits & Survival	Page 12	Life Science Human Body, Vision, & The Brain Animal & Plant Adaptations	Page 35
Earth & Space Science Day Patterns Night Patterns	Page 14	Earth & Space Science Earth's Features & Processes	Page 37
Physical Science Light, Sound, & Communication	Page 16	Physical Science Sound, Waves, & Communication Energy & Energy Transfer Electricity, Light, & Heat	Page 38
2nd Grade	Page 18	5th Grade	Page 42
Life Science Animal Biodiversity Plant Adaptations	Page 19	Life Science Ecosystems & The Food Web	Page 43
Earth & Space Science Erosion & Earth's Surface	Page 21	Earth & Space Science Water Cycle & Earth's Systems Earth & Space Patterns Stars & Planets	Page 45
Physical Science Material Properties	Page 23	Physical Science Chemical Reactions & Properties of Matter	Page 48

All Kindergarten Units • Units may be taught in any order



[Page 4 • Web Link](#)

[Page 5 • Web Link](#)

[Page 6 • Web Link](#)

[Page 7 • Web Link](#)

[Page 8 • Web Link](#)

[Page 9 • Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.K.A
- 3.3.K.B.
- 3.3.K.C.

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 4 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.1.K.A
- 3.3.K.E.

Unit Breakdown:

- 3 Lessons & Activities
- 2 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.3.K.A.
- 3.3.K.D.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.3.K.A.
- 3.3.K.B.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.2.K.C.
- 3.2.K.D.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.2.K.A.
- 3.2.K.B.




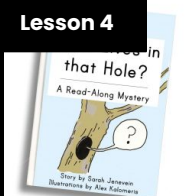
Unit Breakdown:

- 6 Lessons & Activities
- 6 Lesson Assessments
- 6 Extension Blocks





Anchor Layer Adds:

- 1 Anchor Phenomenon
- 6 Anchor Connections
- 1 Performance Task

Animal Needs Unit (Animal Secrets)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Animal Needs: Food Why do woodpeckers peck wood?	3.1.K.A. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	LS1.C. Organization for Matter and Energy Flow in Organisms	Patterns
Lesson 2 	Animal Needs: Shelter Where do animals live?	3.3.K.C. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.	Obtaining, Evaluating, and Communicating Information	ESS3.A. Natural Resources	Patterns Systems and System Models
Lesson 3 	Animal Needs: Safety How can you find animals in the woods?	3.1.K.A. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Obtaining, Evaluating, and Communicating Information Engage in Argument from Evidence	LS1.C. Organization for Matter and Energy Flow in Organisms	Patterns
Lesson 4 	Animals & Changing the Environment How do animals make their homes in the forest?	3.3.K.B. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	Obtaining, Evaluating, and Communicating Information	ESS2.E. Biogeology	Systems and System Models

Plant Needs Unit (Plant Secrets)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Living & Nonliving Are plants alive?	3.1.K.A. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Analyzing and Interpreting Data	LS1.C: Organization for Matter and Energy Flow in Organisms	Patterns
Lesson 2 	Plant Needs: Water & Light How do plants and trees grow?	3.1.K.A. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	LS1.C: Organization for Matter and Energy Flow in Organisms	Patterns Cause and Effect
Lesson 3 	 Human Impacts on the Environment Why would you want an old log in your backyard?	3.3.K.E. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	Obtaining, Evaluating, and Communicating Information	ESS3.C: Human Impacts on Earth Systems	Cause and Effect

Severe Weather Unit (Wild Weather)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Severe Weather & Preparation How can you get ready for a big storm?	3.3.K.D. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	Obtaining, Evaluating, and Communicating Information	ESS3.B: Natural Hazards ESS2.D: Weather and Climate	Cause and Effect
Lesson 2 	Wind & Storms Have you ever watched a storm?	3.3.K.A. Use and share observations of local weather conditions to describe patterns over time.	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	ESS3.B: Natural Hazards ESS2.D: Weather and Climate	Cause and Effect
Lesson 3 	Weather Conditions How many different kinds of weather are there?	3.3.K.A. Use and share observations of local weather conditions to describe patterns over time.	Analyzing and Interpreting Data	ESS2.D: Weather and Climate	Patterns


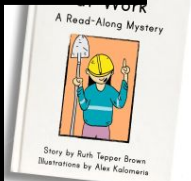


Weather Patterns Unit (Circle of Seasons)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 1</p>	<p>Daily Weather Patterns</p> <p>How do you know what to wear for the weather?</p>	<p>3.3.K.A. Use and share observations of local weather conditions to describe patterns over time.</p>	<p>Analyzing and Interpreting Data</p> <p>Obtaining, Evaluating, and Communicating Information</p> <p>Asking Questions and Defining Problems</p>	<p>ESS2.D: Weather and Climate</p>	<p>Patterns</p>
<p>Lesson 2</p>	<p>Seasonal Weather Patterns</p> <p>What will the weather be like on your birthday?</p>	<p>3.3.K.A. Use and share observations of local weather conditions to describe patterns over time.</p>	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Engaging in Argument from Evidence</p>	<p>ESS2.D: Weather and Climate</p>	<p>Patterns</p> <p>Systems and System Models</p>
<p>Lesson 3</p>	<p>Animals Changing their Environment</p> <p>Why do birds lay eggs in the spring?</p>	<p>3.3.K.B. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</p> <p>3.3.K.A. Use and share observations of local weather conditions to describe patterns over time.</p>	<p>Developing and Using Models</p>	<p>ESS2.D: Weather and Climate</p> <p>ESS2.E: Biogeology</p>	<p>Structure and Function</p>

Sunlight & Warmth Unit (Sunny Skies)



	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 1</p> <p>Story by Pat Murphy</p>	<p>Sunlight, Heat, & Earth's Surface</p> <p>How could you walk barefoot across hot pavement without burning your feet?</p>	<p>3.2.K.C. Make observations to determine the effect of sunlight on Earth's surface.</p> <p>3.2.K.D. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</p>	<p>Asking Questions and Defining Problems</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS3.B: Conservation of Energy and Energy Transfer</p> <p>ETS1.A: Defining and Delimiting an Engineering Problem</p>	<p>Cause and Effect</p> <p>Structure and Function</p>
<p>Lesson 2</p>	<p>Sunlight, Warming, & Engineering</p> <p>How could you warm up a frozen playground?</p>	<p>3.2.K.C. Make observations to determine the effect of sunlight on Earth's surface.</p> <p>3.2.K.D. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.*</p>	<p>Asking Questions and Defining Problems</p> <p>Planning and Carrying Out Investigations</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS3.B: Conservation of Energy and Energy Transfer</p> <p>ETS1.A: Defining and Delimiting an Engineering Problem</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Cause and Effect</p>
<p>Lesson 3</p>	<p>Sunlight & Warmth</p> <p>Why does it get cold in winter?</p>	<p>3.2.K.C. Make observations to determine the effect of sunlight on Earth's surface.</p>	<p>Planning and Carrying Out Investigations</p>	<p>PS3.B: Conservation of Energy and Energy Transfer</p>	<p>Cause and Effect</p>

Pushes & Pulls Unit (Force Olympics) • Page 1 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Pushes & Pulls What's the biggest excavator?	Foundational for 3.2.K.B. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Constructing Explanations and Designing Solutions	PS2.A: Forces and Motion PS2.B: Types of Interactions PS3.C: Relationship Between Energy and Forces	Cause and Effect
Lesson 2 	Pushes, Pulls, & "Work Words" Why do builders need so many big machines?	Foundational for 3.2.K.B. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Obtaining, Evaluating, and Communicating Information	PS2.A: Forces and Motion PS2.B: Types of Interactions PS3.C: Relationship Between Energy and Forces	Cause and Effect
Lesson 3 	Motion, Speed, & Strength How can you knock down a wall made of concrete?	3.2.K.B. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Planning and Carrying Out Investigations Developing and Using Models	PS2.A: Forces and Motion PS2.B: Types of Interactions PS3.C: Relationship Between Energy and Forces	Cause and Effect
Lesson 4 	Speed & Direction of Force How can you knock down the most bowling pins?	3.2.K.B. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Planning and Carrying Out Investigations	PS2.A: Forces and Motion	Cause and Effect

Continued on next page

Pushes & Pulls Unit (Force Olympics) • Page 2 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 5</p>	<p>Direction of Motion & Engineering</p> <p>How can we protect a mountain town from falling rocks?</p>	<p>3.2.K.A. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	<p>Developing and Using Models</p> <p>Planning and Carrying Out Investigations</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS2.A: Forces and Motion</p> <p>ETS1.A: Defining Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Cause and Effect</p>
 <p>Lesson 6</p>	<p>Forces & Engineering</p> <p>How could you invent a trap?</p>	<p>3.2.K.A. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>ETS1.B: Developing Possible Solutions</p>	<p>Structure and Function</p>

All 1st Grade Units • Units may be taught in any order



**Animal Traits
& Survival**

[Page 12](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.1.A.
- 3.1.1.B.
- 3.1.1.C.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task



**Plant Traits &
Survival**

[Page 13](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.1.A.
- 3.1.1.C.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task



**Day
Patterns**

[Page 14](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.3.1.A.
- 3.3.1.B.

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 4 Anchor Connections
- 1 Performance Task



**Night
Patterns**

[Page 15](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.3.1.A.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task



**Light,
Sound, &
Communication**

[Page 16](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.2.1.A.
- 3.2.1.B.
- 3.2.1.C.
- 3.2.1.D.





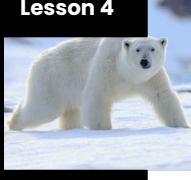


Unit Breakdown:

- 6 Lessons & Activities
- 6 Lesson Assessments
- 6 Extension Blocks





Anchor Layer Adds:

- 1 Anchor Phenomenon
- 6 Anchor Connections
- 1 Performance Task

Animal Traits & Survival Unit (Animal Superpowers)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Parent & Offspring Traits How can you help a lost baby animal find its parents?	3.1.1.C. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Constructing Explanations and Designing Solutions	LS3.A: Inheritance of Traits LS3.B: Variation of Traits	Patterns
Lesson 2 	Animal Structures & Survival Why do birds have beaks?	3.1.1.A. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data	LS1.A: Structure and Function	Patterns Structure and function
Lesson 3 	 Animal Behavior & Offspring Survival Why do baby ducks follow their mother?	3.1.1.B. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	Obtaining, Evaluating, and Communicating Information	LS1.B: Growth and Development of Organisms	Patterns
Lesson 4 	Camouflage & Animal Survival Why are polar bears white?	3.1.1.A. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Developing and Using Models Planning and Carrying Out Investigations Engaging in Argument from Evidence	LS1.B: Growth and Development of Organisms	Patterns Structure and function
Lesson 5 	 Inheritance & Variation of Traits Why do family members look alike?	3.1.1.C. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Constructing Explanations and Designing Solutions	LS3.A: Inheritance of Traits LS3.B: Variation of Traits	Patterns





Plant Traits & Survival Unit (Plant Superpowers)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Plant Traits & Offspring What will a baby plant look like when it grows up?	3.1.1.C. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Constructing Explanations and Designing Solutions	LS3.A: Inheritance of Traits LS3.B: Variation of Traits	Patterns
Lesson 2 	Plant Survival & Engineering Why don't trees blow down in the wind?	3.1.1.A. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Developing and Using Models Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	LS1.A: Structure and Function ETS1.A: Defining and Delimiting Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution	Structure and function
Lesson 3 	 Plant Movement & Survival What do sunflowers do when you're not looking?	3.1.1.A. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Constructing Explanations and Designing Solutions	LS1.A: Structure and Function LS1.D: Information Processing	Structure and function

Day Patterns Unit (Sun & Shadows)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Sun, Shadows, & Daily Patterns Could a statue's shadow move?	3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	ESS1.A: The Universe and its Stars	Patterns
Lesson 2 	Sun, Shadows, & Daily Patterns What does your shadow do when you're not looking?	3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Analyzing and Interpreting Data	ESS1.A: The Universe and its Stars	Patterns
Lesson 3 	Sun & Daily Patterns How can the Sun help you if you're lost?	3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Developing and Using Models Engaging in Argument from Evidence	ESS1.A: The Universe and its Stars	Patterns
Lesson 4 	Daylight & Seasonal Patterns Why do you have to go to bed early in the summer?	3.3.1.B. Make observations at different times of year to relate the amount of daylight to the time of year.	Obtaining, Evaluating, and Communicating Information	ESS1.B: Earth and the Solar System	Patterns

Night Patterns Unit (Moon & Stars)



	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Moon Phases & Patterns When can you see the full moon?	3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Analyzing and Interpreting Data	ESS1.A: The Universe and its Stars	Patterns
Lesson 2 	Stars & Daily Patterns Why do stars come out at night?	3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Developing and Using Models Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	ESS1.A: The Universe and its Stars	Patterns Cause and Effect
Lesson 3 	 Stars & Seasonal Patterns How can stars help you if you get lost?	3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Obtaining, Evaluating, and Communicating Information	ESS1.A: The Universe and its Stars	Patterns

Light, Sound, & Communication Unit (Lights & Sounds) • Page 1 of 2

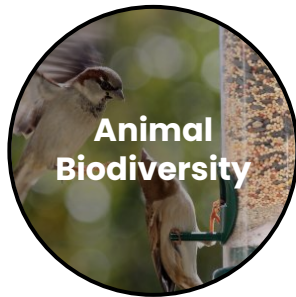
	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Sounds & Vibrations How do they make silly sounds in cartoons?	3.2.1.A. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Constructing Explanations and Designing Solutions	PS4.A: Wave Properties	Cause and Effect
Lesson 2 	Sounds & Vibrations Where do sounds come from?	3.2.1.A. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Constructing Explanations and Designing Solutions	PS4.A: Wave Properties	Cause and Effect
Lesson 3 	Light, Materials, Transparent & Opaque What if there were no windows?	3.2.1.C. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	Planning and Carrying Out Investigations Engaging in Argument from Evidence	PS4.B: Electromagnetic Radiation	Cause and Effect
Lesson 4 	Light & Illumination Can you see in the dark?	3.2.1.B. Make observations to construct an evidence-based account that objects can be seen only when illuminated.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	PS4.B: Electromagnetic Radiation	Cause and Effect

Continued on next page

Light, Sound, & Communication Unit (Lights & Sounds) • Page 2 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 5</p> 	<p>Light, Communication, & Engineering</p> <p>How could you send a secret message to someone far away?</p>	<p>3.2.1.D. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>PS4.C: Information Technologies and Instrumentation</p> <p>ETS1.B: Developing Possible Solutions</p>	<p>Patterns</p>
<p>Lesson 6</p> 	<p>Lights, Sounds, & Communication</p> <p>How do boats find their way in the fog?</p>	<p>3.2.1.B. Make observations to construct an evidence-based account that objects can be seen only when illuminated.</p>	<p>Obtaining, Evaluating, and Communicating Information</p>	<p>PS4.C: Information Technologies and Instrumentation</p>	<p>Patterns</p>

All 2nd Grade Units • Units may be taught in any order



[Page 19](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.2.C.

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 4 Anchor Connections
- 1 Performance Task



[Page 20](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.2.A.
- 3.1.2.B.
- 3.1.2.C.

Unit Breakdown:

- 5 Lessons & Activities
- 4 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 4 Anchor Connections
- 1 Performance Task



[Page 21](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.3.2.A.
- 3.3.2.B.
- 3.3.2.C.
- 3.3.2.D.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 4 Anchor Connections
- 1 Performance Task



[Page 23](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.2.2.A.
- 3.2.2.B.
- 3.2.2.C.
- 3.2.2.D.

Unit Breakdown:

- 6 Lessons & Activities
- 6 Lesson Assessments
- 6 Extension Blocks
- 1 Unit Assessment





Anchor Layer Adds:

- 1 Anchor Phenomenon
- 6 Anchor Connections
- 1 Performance Task

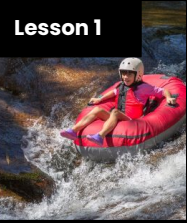



Animal Biodiversity (Animal Adventures)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Biodiversity & Classification How many different kinds of animals are there?	Foundational for 3.1.2.C. Make observations of plants and animals to compare the diversity of life in different habitats.	Obtaining, Evaluating, and Communicating Information	LS4.D: Biodiversity and Humans	Patterns
Lesson 2 	Habitat Diversity Why would a wild animal visit a playground?	3.1.2.C. Make observations of plants and animals to compare the diversity of life in different habitats.	Analyzing and Interpreting Data Planning and Carrying Out Investigations	LS4.D: Biodiversity and Humans	Patterns
Lesson 3 	Biodiversity, Habitats, & Species Why do frogs say "ribbit"?	3.1.2.C. Make observations of plants and animals to compare the diversity of life in different habitats.	Analyzing and Interpreting Data Engaging in Argument from Evidence	LS4.D: Biodiversity and Humans	Patterns
Lesson 4 	Biodiversity & Engineering How could you get more birds to visit a bird feeder?	3.1.2.C. Make observations of plants and animals to compare the diversity of life in different habitats.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models	LS4.D: Biodiversity and Humans	Cause and Effect

Plant Adaptations (Plant Adventures)


	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p>	<p>Seed Dispersal</p> <p>How did a tree travel halfway around the world?</p>	<p>Foundational for 3.1.2.B. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</p>	<p>Developing and Using Models</p> <p>Planning and Carrying Out Investigations</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p>	<p>Structure and Function</p>
 <p>Lesson 2</p>	<p>Animal Seed Dispersal</p> <p>Why do seeds have so many different shapes?</p>	<p>3.1.2.B. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</p>	<p>Developing and Using Models</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p>	<p>Structure and Function</p>
 <p>Lesson 3</p>	<p>Water, Sunlight, & Plant Growth</p> <p>Could a plant survive without light?</p>	<p>3.1.2.A. Plan and conduct an investigation to determine if plants need sunlight and water to grow.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p>	<p>Cause and Effect</p>
 <p>Lesson 4</p>	<p>Plant Needs & Habitats</p> <p>How much water should you give a plant?</p>	<p>3.1.2.C. Make observations of plants and animals to compare the diversity of life in different habitats.</p>	<p>Planning and Carrying Out Investigations</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p>	<p>Cause and Effect</p>

Erosion & Earth's Surface (Work of Water) • Page 1 of 2





	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p>	<p>Mapping & Earth's Surface Features</p> <p>If you floated down a river, where would you end up?</p>	<p>3.3.2.C. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>3.3.2.D. Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p>	<p>Developing and Using Models</p> <p>Planning and Carrying Out Investigations</p>	<p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p> <p>ESS2.C: The Roles of Water in Erosion & Earth's Surface</p>	<p>Patterns</p>
 <p>Lesson 2</p>	<p>Rocks, Sand, & Erosion</p> <p>Why is there sand at the beach?</p>	<p>3.3.2.C. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</p>	<p>Planning and Carrying Out Investigations</p> <p>Developing and Using Models</p>	<p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p>	<p>Cause and Effect</p> <p>Stability and Change</p>
 <p>Lesson 3</p>	<p>Mapping & Severe Weather</p> <p>Where do flash floods happen?</p>	<p>3.3.2.C. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>3.3.2.A. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</p>	<p>Developing and Using Models</p>	<p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p>	<p>Patterns</p>
 <p>Lesson 4</p>	<p>Erosion, Earth's Surface, & Landforms</p> <p>What's strong enough to make a canyon?</p>	<p>3.3.2.A. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</p>	<p>Planning and Carrying Out Investigations</p> <p>Constructing Explanations and Designing Solutions</p>	<p>ESS1.C: The History of Planet Earth</p> <p>ESS2.A: Earth Materials and Systems</p>	<p>Cause and Effect</p> <p>Stability and Change</p>

Continued on next page

Erosion & Earth's Surface (Work of Water) • Page 2 of 2



	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 5</p> 	<p>Erosion & Engineering</p> <p>How can you stop a landslide?</p>	<p>3.3.2.B. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</p>	<p>Asking Questions and Defining Problems</p> <p>Constructing Explanations and Designing Solutions</p>	<p>ESS1.C: The History of Planet Earth</p> <p>ESS2.A: Earth Materials and Systems</p> <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Stability and Change</p> <p>Structure and Function</p>

Material Properties (Material Magic) • Page 1 of 2

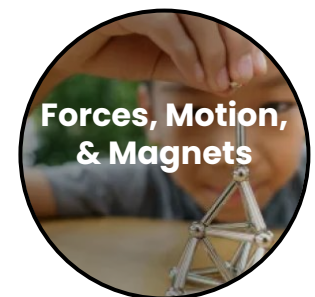
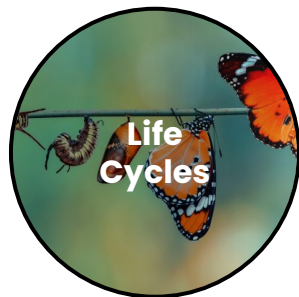
	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p>	<p>Material Properties & Engineering</p> <p>Why do we wear clothes?</p>	<p>3.2.2.A. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p> <p>3.2.2.B. Analyze data obtained from testing different materials by their observable properties that are best suited for an intended purpose.</p>	<p>Asking Questions and Defining Problems</p> <p>Planning and Carrying Out Investigations</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS1.A: Structure and Properties of Matter</p> <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p>	<p>Patterns</p> <p>Cause and Effect</p>
 <p>Lesson 2</p>	<p>Classify Materials: Insulators</p> <p>Can you really fry an egg on a hot sidewalk?</p>	<p>3.2.2.B. Analyze data obtained from testing different materials by their observable properties that are best suited for an intended purpose.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>PS1.A: Structure and Properties of Matter</p>	<p>Patterns</p> <p>Cause and Effect</p>
 <p>Lesson 3</p>	<p>Heating, Cooling, & Phases of Matter</p> <p>Why are so many toys made out of plastic?</p>	<p>3.2.2.B. Analyze data obtained from testing different materials by their observable properties that are best suited for an intended purpose.</p> <p>3.2.2.D. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>PS1.A: Structure and Properties of Matter</p> <p>PS1.B: Chemical Reactions</p>	<p>Cause and Effect</p> <p>Energy and Matter</p>
 <p>Lesson 4</p>	<p>Inventions & Engineering</p> <p>What materials might be invented in the future?</p>	<p>3.2.2.A. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>ETS1.B: Developing Possible Solutions</p>	<p>Structure and Function</p>

Continued on next page

Material Properties (Material Magic) • Page 2 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 5</p> 	<p>Materials, Properties, & Engineering</p> <p>Could you build a house out of paper?</p>	<p>3.2.2.C. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p>	<p>Constructing Explanations and Designing Solutions</p> <p>Developing and Using Models</p>	<p>PS1.A: Structure and Properties of Matter</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Energy and Matter</p> <p>Cause and Effect</p>
<p>Lesson 6</p> 	<p>Soil Properties</p> <p>How do you build a city out of mud?</p>	<p>3.2.2.A. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p> <p>3.2.2.B. Analyze data obtained from testing different materials by their observable properties that are best suited for an intended purpose.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>PS1.A: Structure and Properties of Matter</p>	<p>Patterns</p>

All 3rd Grade Units • Units may be taught in any order. *Note: 3rd Grade underwent a restructuring Summer 2023.*



[Page 26](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.3.E.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

[Page 27](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.3.A.
- 3.1.3.H.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task

[Page 28](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.3.B.
- 3.1.3.C.
- 3.1.3.D.
- 3.1.3.F.
- 3.1.3.G.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task

[Page 30](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.3.3.A.
- 3.3.3.B.
- 3.3.3.C.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task

[Page 32](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.2.3.A.
- 3.2.3.B.
- 3.2.3.C.
- 3.2.3.D.




Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task


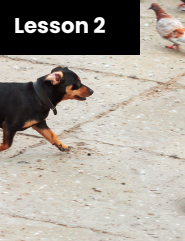

Fossils & Changing Environments Unit (Animals Through Time)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1 Habitats, Fossils, & Environments Over Time</p> <p>Where can you find whales in a desert?</p>	<p>3.1.3.E. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</p>	Analyzing and Interpreting Data	LS4.A: Evidence of Common Ancestry and Diversity	Scale, Proportion, and Quantity	
 <p>Lesson 2 Fossil Evidence & Dinosaurs</p> <p>How do we know what dinosaurs looked like?</p>	<p>3.1.3.E. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</p>	Analyzing and Interpreting Data Engaging in Argument from Evidence	LS4.A: Evidence of Common Ancestry and Diversity	Structure and Function Patterns	
 <p>Lesson 3 Trace Fossil Evidence & Animal Movement</p> <p>Can you outrun a dinosaur?</p>	<p>3.1.3.E. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</p>	Using Mathematics and Computational Thinking Planning and Carrying Out Investigations	LS4.A: Evidence of Common Ancestry and Diversity	Patterns	

Life Cycles Unit (Circle of Life)

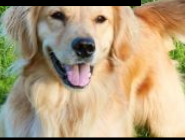

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Animal Life Cycles How is your life like an alligator's life?	3.1.3.A. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Developing and Using Models	LS1.B: Growth and Development of Organisms	Patterns
Lesson 2 	Environmental Change & Engineering What's the best way to get rid of mosquitoes?	3.1.3.H. Make a claim supported by evidence about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Obtaining, Evaluating, and Communicating Information Constructing Explanations and Designing Solutions	LS4.D Biodiversity and Humans LS2.C: Ecosystem Dynamics, Functioning, & Resilience ETS1.B: Developing Possible Solutions	Cause and Effect Systems and System Models
Lesson 3 	Pollination & Plant Reproduction Why do plants grow flowers?	3.1.3.A. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Developing and Using Models Analyzing and Interpreting Data	LS1.B: Growth and Development of Organisms	Patterns Structure and Function
Lesson 4 	Fruit, Seeds, & Plant Reproduction Why do plants give us fruit?	3.1.3.A. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Analyzing and Interpreting Data	LS1.B: Growth and Development of Organisms	Patterns Structure and Function
Lesson 5 	Plant Life Cycles Why are there so many different kinds of flowers?	3.1.3.A. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Developing and Using Models	LS1.B: Growth and Development of Organisms	Patterns

Heredity, Survival, & Selection Unit (Fates of Traits) • Page 1 of 2




	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	<p>🌟 New! 🌟</p> <p>Traits & Inheritance</p> <p>How do you identify a mysterious fruit?</p>	<p>3.1.3.C. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</p>	Analyzing and Interpreting Data	LS3.A: Inheritance of Traits	Patterns
Lesson 2 	<p>🌟 New! 🌟</p> <p>Trait Variation, Inheritance, & Artificial Selection</p> <p>What do dogs and pigeons have in common?</p>	<p>3.1.3.C. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</p>	Analyzing and Interpreting Data	<p>LS3.A: Inheritance of Traits</p> <p>LS3.B: Variation of Traits</p>	Patterns
Lesson 3 	<p>🌟 New! 🌟</p> <p>Trait Variation, Survival, & Natural Selection</p> <p>How could a lizard's toes help it survive?</p>	<p>3.1.3.C. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</p> <p>3.1.3.F. Use evidence to construct an explanation for how the variation in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</p> <p>3.1.3.G. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</p>	<p>Constructing Explanations and Designing Solutions</p> <p>Analyzing and Interpreting Data</p> <p>Using Mathematics and Computational Thinking</p>	<p>LS3.A: Inheritance of Traits</p> <p>LS3.B: Variation of Traits</p> <p>LS4.B: Natural Selection</p> <p>LS4.C: Adaptation</p>	<p>Cause and Effect</p> <p>Patterns</p> <p>Stability and Change</p>

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Heredity, Survival, & Selection Unit (Fates of Traits) • Page 2 of 2

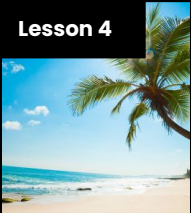

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 4</p> 	<p>Animal Groups & Survival</p> <p>Why do dogs wag their tails?</p>	<p>3.1.3.B. Construct an argument that some animals have physical and behavioral adaptations that help members survive.</p>	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Engaging in Argument from Evidence</p>	<p>LS2.D: Social Interactions and Group Behavior</p>	<p>Cause and Effect</p>
<p>Lesson 5</p> 	<p>Traits & Environmental Variation</p> <p>How long can people (and animals) survive in outer space?</p>	<p>3.1.3.D. Use evidence to support the explanation that traits can be influenced by the environment.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>LS3.A: Inheritance of Traits</p> <p>LS3.B: Variation of Traits</p>	<p>Cause and Effect</p>

Weather & Climate Unit (Stormy Skies) • Page 1 of 2


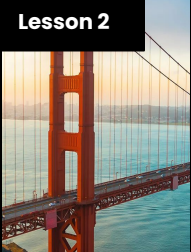

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Water Cycle & States of Matter Where do clouds come from?	Foundational for 3.3.3.A. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Planning and Carrying Out Investigations Developing and Using Models	ESS2.D: Weather and Climate	Structure and Function Stability and Change
Lesson 2 	Local Weather Patterns & Weather Prediction How can we predict when it's going to storm?	3.3.3.A. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Analyzing and Interpreting Data	ESS2.D: Weather and Climate	Patterns
Lesson 3 	Seasonal Weather Patterns Where's the best place to build a snow fort?	3.3.3.A. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Analyzing and Interpreting Data	ESS2.D: Weather and Climate	Patterns

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Weather & Climate Unit (Stormy Skies) • Page 2 of 2

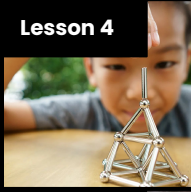

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 4</p>	<p>Climate & Global Weather Patterns</p> <p>Why are some places always hot?</p>	<p>3.3.3.B. Obtain and combine information to describe climates in different regions of the world.</p> <p>3.3.3.A. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.</p>	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Analyzing and Interpreting Data</p>	<p>ESS2.D: Weather and Climate</p>	<p>Patterns</p>
 <p>Lesson 5</p>	<p>Natural Hazards & Engineering</p> <p>How can you keep a house from blowing away in a windstorm?</p>	<p>3.3.3.C. Make a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard.</p>	<p>Asking Questions and Defining Problems</p> <p>Constructing Explanations and Designing Solutions</p> <p>Analyzing and Interpreting Data</p>	<p>ESS3.B: Natural Hazards</p> <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Cause and Effect</p>

Forces, Motion, & Magnets Unit (Invisible Forces) • Page 1 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p>	<p>Balanced & Unbalanced Forces</p> <p>How could you win a tug-of-war against a bunch of adults?</p>	<p>3.2.3.B. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.</p>	<p>Planning and Carrying Out Investigations</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS2.A: Forces and Motion</p> <p>PS2.B: Types of Interactions</p>	<p>Cause and Effect</p>
 <p>Lesson 2</p>	<p>Balanced Forces & Engineering</p> <p>What makes bridges so strong?</p>	<p>Foundational for 3.2.3.B. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.</p>	<p>Asking Questions and Defining Problems</p> <p>Constructing Explanations and Designing Solutions</p>	<p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Structure and Function</p>
 <p>Lesson 3</p>	<p>Patterns of Motion, Gravity, & Friction</p> <p>How high can you swing on a flying trapeze?</p>	<p>3.2.3.A. Make and communicate observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.</p>	<p>Developing and Using Models</p> <p>Planning and Carrying Out Investigations</p>	<p>PS2.A: Forces and Motion</p>	<p>Patterns</p> <p>Cause and Effect</p>

Continued on next page

Forces, Motion, & Magnets Unit (Invisible Forces) • Page 2 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 4</p>	<p>Magnets & Forces</p> <p>What can magnets do?</p>	<p>3.2.3.C. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.</p>	<p>Asking Questions and Defining Problems</p>	<p>PS2.B: Types of Interactions</p>	<p>Cause and Effect</p>
 <p>Lesson 5</p>	<p>Magnets & Engineering</p> <p>How can you unlock a door using a magnet?</p>	<p>3.2.3.D. Define a simple design problem that can be solved by applying scientific ideas about magnets.</p>	<p>Asking Questions and Defining Problems</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS2.B: Types of Interactions</p> <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p>	<p>Cause and Effect</p>

All 4th Grade Units • Units may be taught in any order



Page 35 • [Web Link](#)

Page 36 • [Web Link](#)

Page 37 • [Web Link](#)

Page 38 • [Web Link](#)

Page 39 • [Web Link](#)

Page 41 • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.4.A.
- 3.1.4.B.
- 3.2.4.F.

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 4 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.1.4.A.
- 3.1.4.B.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.3.4.A.
- 3.3.4.B.
- 3.3.4.C.
- 3.3.4.E.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.2.4.E.
- 3.2.4.G.

Unit Breakdown:

- 4 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.2.4.A.
- 3.2.4.C.
- 3.2.4.D.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 5 Anchor Connections
- 1 Performance Task

Pennsylvania STEELS Standards for Science:

- 3.2.4.B.
- 3.2.4.D.
- 3.3.4.D.


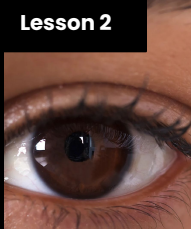


Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks
- 1 Unit Assessment


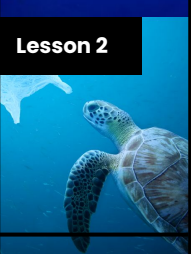

Anchor Layer Adds:

- 1 Anchor Phenomenon
- 3 Anchor Connections
- 1 Performance Task






Human Body, Vision, & The Brain Unit (Human Machine)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1 Muscles & Skeleton</p> <p>Why do your biceps bulge?</p>	<p>3.1.4.A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p>	<p>Developing and Using Models</p> <p>Constructing Explanations and Designing Solutions</p>	<p>LS1.A: Structure and Function</p>	<p>Systems and System Models</p> <p>Cause and Effect</p>	
 <p>Lesson 2 Light, Eyes, & Vision</p> <p>What do people who are blind see?</p>	<p>3.2.4.F. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p> <p>3.1.4.A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p>	<p>Developing and Using Models</p> <p>Constructing Explanations and Designing Solutions</p>	<p>LS1.A: Structure and Function</p> <p>PS4.B: Electromagnetic Radiation</p>	<p>Systems and System Models</p> <p>Cause and Effect</p>	
 <p>Lesson 3 Structure & Function of Eyes</p> <p>How can some animals see in the dark?</p>	<p>3.2.4.F. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p> <p>3.1.4.A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p>	<p>Planning and Carrying Out Investigations</p> <p>Developing and Using Models</p> <p>Constructing Explanations and Designing Solutions</p>	<p>LS1.A: Structure and Function</p> <p>PS4.B: Electromagnetic Radiation</p>	<p>Systems and System Models</p> <p>Cause and Effect</p>	
 <p>Lesson 4 Brain, Nerves, & Information Processing</p> <p>How does your brain control your body?</p>	<p>3.1.4.B. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>LS1.D: Information Processing</p>	<p>Systems and System Models</p>	





★ Animal & Plant Adaptations Unit (Animal & Plant Adaptations)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	<p>🌟 New! 🌟</p> <p>Animal Adaptations</p> <p>Why do some sea creatures look so strange?</p>	<p>3.1.4.A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p>	<p>Engaging in Argument from Evidence</p>	<p>LS1.A: Structure and Function</p>	<p>Systems and System Models</p>
Lesson 2 	<p>🌟 New! 🌟</p> <p>Learned Behavior & Instinct</p> <p>Why would a sea turtle eat a plastic bag?</p>	<p>3.1.4.B. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.</p>	<p>Developing and Using Models</p> <p>Constructing Explanations and Designing Solutions</p>	<p>LS1.D: Information Processing</p>	<p>Systems and System Models</p>
Lesson 3 	<p>🌟 New! 🌟</p> <p>Plant Adaptations</p> <p>Why don't the same trees grow everywhere?</p>	<p>3.1.4.A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p>	<p>Engaging in Argument from Evidence</p> <p>Developing and Using Models</p>	<p>LS1.A: Structure and Function</p>	<p>Systems and System Models</p>



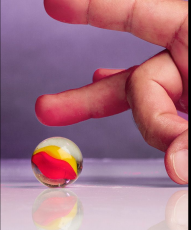

Earth's Features & Processes Unit (Birth of Rocks)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p> <p>Volcanoes & Patterns of Earth's Features</p> <p>Could a volcano pop up where you live?</p>	<p>3.3.4.C. Analyze and interpret data from maps to describe patterns of Earth's features.</p>	<p>Analyzing and Interpreting Data</p> <p>Engaging in Argument from Evidence</p>	<p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p>	<p>Patterns</p>	
 <p>Lesson 2</p> <p>Volcanoes & Rock Cycle</p> <p>Why do some volcanoes explode?</p>	<p>3.3.4.A. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>ESS1.C: The History of Planet Earth</p>	<p>Cause and Effect</p>	
 <p>Lesson 3</p> <p>Weathering & Erosion</p> <p>Will a mountain last forever?</p>	<p>3.3.4.B. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>ESS2.A: Earth Materials and Systems</p> <p>ESS2.E: Biogeology</p>	<p>Cause and Effect</p>	
 <p>Lesson 4</p> <p>Sedimentary Rock & Fossils</p> <p>What did your town look like 100 million years ago?</p>	<p>3.3.4.A. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p>	<p>Constructing Explanations and Designing Solutions</p> <p>Developing and Using Models</p>	<p>ESS1.C: The History of Planet Earth</p>	<p>Patterns</p>	
 <p>Lesson 5</p> <p>Erosion, Natural Hazards, & Engineering</p> <p>How could you survive a landslide?</p>	<p>3.3.4.E. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>ESS3.B: Natural Hazards</p> <p>ETS1.B: Designing Solutions to Engineering Problems</p>	<p>Cause and Effect</p>	

Sound, Waves, & Communication Unit (Waves of Sound)


	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p>	<p>Pattern Transfer & Technology</p> <p>How do you send a secret code?</p>	<p>3.2.4.G. Generate and compare multiple solutions that use patterns to transfer information.</p>	<p>Constructing Explanations and Designing Solutions</p>	<p>PS4.C: Information Technologies and Instrumentation</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Patterns</p>
 <p>Lesson 2</p>	<p>Sound, Vibration, & Engineering</p> <p>How far can a whisper travel?</p>	<p>Foundational for 3.2.4.E. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p>	<p>Developing and Using Models</p> <p>Planning and Carrying Out Investigations</p>	<p>PS4.A: Wave Properties</p> <p>ETS1.B: Developing Possible Solutions</p>	<p>Patterns</p>
 <p>Lesson 3</p>	<p>Sound & Vibrations</p> <p>What would happen if you screamed in outer space?</p>	<p>Foundational for 3.2.4.E. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p>	<p>Developing and Using Models</p>	<p>PS4.A: Wave Properties</p>	<p>Patterns</p>
 <p>Lesson 4</p>	<p>Sound Waves & Wavelength</p> <p>Why are some sounds high and some sounds low?</p>	<p>3.2.4.E. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p>	<p>Developing and Using Models</p>	<p>PS4.A: Wave Properties</p>	<p>Patterns</p>

✓ Energy & Energy Transfer Unit (Energizing Everything) • Page 1 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Speed & Energy How is your body similar to a car?	3.2.4.A. Use evidence to construct an explanation relating the speed of an object to the energy of that object.	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions	PS3.A: Definitions of Energy	Energy and Matter Systems and System Models
Lesson 2 	Gravitational Energy, Speed, & Collisions What makes roller coasters go so fast?	3.2.4.A. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 3.2.4.C. Ask questions and predict outcomes about the changes in energy that occur when objects collide.	Developing and Using Models Analyzing and Interpreting Data	PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer	Energy and Matter Systems and System Models
Lesson 3 	Collisions & Energy Transfer How can marbles save the world?	3.2.4.C. Ask questions and predict outcomes about the changes in energy that occur when objects collide.	Asking Questions and Defining Problems	PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces	Energy and Matter
Lesson 4 	Energy Transfer & Engineering Could you knock down a building using only dominoes?	3.2.4.D. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	Developing and Using Models	PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces ETS1.A: Defining and Delimiting Engineering Problems	Energy and Matter

Continued on next page

✓ **Energy & Energy Transfer Unit** (Energizing Everything) • Page 2 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 5</p> 	<p>Energy Transfer & Engineering</p> <p>Can you build a chain reaction machine?</p>	<p>3.2.4.D. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p>	<p>Developing and Using Models</p>	<p>PS3.A: Definitions of Energy</p> <p>PS3.C: Relationship Between Energy and Forces</p> <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Energy and Matter</p>

✓★ Electricity, Light, & Heat Unit (Electricity, Light & Heat)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	<p>✨ New! ✨</p> <p>Renewable Energy & Natural Resources</p> <p>What's the best way to light up a city?</p>	<p>3.3.4.D. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p>	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Using Mathematics and Computational Thinking</p>	<p>ESS3.A: Natural Resources</p>	<p>Energy and Matter</p> <p>Cause and Effect</p>
Lesson 2 	<p>Electrical Energy</p> <p>What if there were no electricity?</p>	<p>3.2.4.B. Make and communicate observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>3.2.4.D. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p>	<p>Constructing Explanations and Designing Solutions</p> <p>Developing and Using Models</p>	<p>PS3.D: Energy in Chemical Processes and Everyday Life</p> <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <p>ETS1.B: Developing Possible Solutions</p> <p>ETS1.C: Optimizing the Design Solution</p>	<p>Energy and Matter</p>
Lesson 3 	<p>Heat Energy & Energy Transfer</p> <p>How long did it take to travel across the country before cars and planes?</p>	<p>3.2.4.B. Make and communicate observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>3.2.4.D. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p>	<p>Planning and Carrying Out Investigations</p>	<p>PS3.B: Conservation of Energy and Energy Transfer</p> <p>PS3.D: Energy in Chemical Processes and Everyday Life</p>	<p>Energy and Matter</p>

All 5th Grade Units • Units may be taught in any order



[Page 43](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.1.5.A.
- 3.1.5.B.
- 3.2.5.G.
- 3.3.5.E.

Unit Breakdown:

- 7 Lessons & Activities
- 7 Lesson Assessments
- 7 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomena
- 7 Anchor Connections
- 1 Performance Task

[Page 45](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.2.5.D.
- 3.3.5.C.
- 3.3.5.D.
- 3.3.5.F.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

[Page 46](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.3.5.B.

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:

- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

[Page 47](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.2.5.F.
- 3.3.5.A.

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks
- 1 Unit Assessment

Anchor Layer will be added to this unit in the 2024-2025 school year.

[Page 48](#) • [Web Link](#)

Pennsylvania STEELS Standards for Science:

- 3.2.5.A.
- 3.2.5.B.
- 3.2.5.C.
- 3.2.5.D.
- 3.2.5.E.




Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:





- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

Ecosystems & The Food Web Unit (Web of Life) • Page 1 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 1</p> 	<p>Food Chains, Producers, & Consumers</p> <p>Why would a hawk move to New York City?</p>	<p>3.1.5.B. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>Developing and Using Models</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p>	<p>Energy and Matter</p> <p>Systems and System Models</p>
<p>Lesson 2</p> 	<p>Matter & Plant Growth</p> <p>What do plants eat?</p>	<p>3.1.5.A. Support an argument that plants get the materials they need for growth chiefly from air and water.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p> <p>Constructing Explanations and Designing Solutions</p>	<p>LS1.C. Organization for Matter and Energy Flow in Organisms</p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p>	<p>Cause and Effect</p> <p>Energy and Matter</p>
<p>Lesson 3</p> 	<p>Decomposers & Matter Cycle</p> <p>Where do fallen leaves go?</p>	<p>3.1.5.B. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>Planning and Carrying Out Investigations</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p>	<p>Energy and Matter</p>

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Ecosystems & The Food Web Unit (Web of Life) • Page 2 of 2

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 4</p>	<p>Decomposers, Nutrients, & Matter Cycle</p> <p>Do worms really eat dirt?</p>	<p>3.1.5.B. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>Planning and Carrying Out Investigations</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p>	<p>Energy and Matter</p>
 <p>Lesson 5</p>	<p>Ecosystems & Matter Cycle</p> <p>Why do you have to clean a fish tank but not a pond?</p>	<p>3.1.5.B. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>Developing and Using Models</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p>	<p>Systems and System Models</p> <p>Energy and Matter</p>
 <p>Lesson 6</p>	<p>Protecting Environments</p> <p>How can we protect Earth's environments?</p>	<p>3.3.5.E. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>Obtaining, Evaluating, and Communicating Information</p>	<p>ESS3.C: Human Impacts on Earth Systems</p>	<p>Systems and System Models</p>
 <p>Lesson 7</p>	<p>Food Webs & Flow of Energy</p> <p>Why did the dinosaurs go extinct?</p>	<p>3.2.5.G. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p>	<p>Developing and Using Models</p> <p>Constructing Explanations and Designing Solutions</p>	<p>PS3.D: Energy in Chemical Processes and Everyday Life</p> <p>LS1.C: Organization for Matter and Energy Flow in Organisms</p>	<p>Energy and Matter</p> <p>Systems and System Models</p>



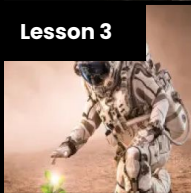
Water Cycle & Earth's Systems Unit (Watery Planet)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Hydrosphere & Water Distribution How much water is in the world?	3.3.5.D. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Analyzing and Interpreting Data Using Mathematics and Computational Thinking	ESS2.C: The Roles of Water in Earth's Surface Processes	Scale, Proportion, and Quantity
Lesson 2 	Mixtures & Solutions How much salt is in the ocean?	3.2.5.D. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	Developing and Using Models Using Mathematics and Computational Thinking	PS1.A: Structure and Properties of Matter	Scale, Proportion, and Quantity
Lesson 3 	Groundwater as a Natural Resource When you turn on the faucet, where does the water come from?	3.3.5.D. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	ESS2.C: The Roles of Water in Earth's Surface Processes	Patterns
Lesson 4 	Water Cycle Can we make it rain?	3.3.5.C. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Developing and Using Models Planning and Carrying Out Investigations	ESS2.A: Earth Materials and Systems	Systems and System Models
Lesson 5 	Natural Disasters & Engineering How can you save a town from a hurricane?	3.3.5.F. Generate and design possible solutions to a current environmental issue, threat, or concern.	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	ETS1.A: Defining and Delimiting Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution	Systems and System Models






✓ Earth & Space Patterns Unit (Spaceship Earth)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
<p>Lesson 1</p> <p>Day, Night, & Earth's Rotation</p> <p>How fast does the Earth spin?</p>	<p>Foundational for 3.3.5.B. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>Developing and Using Models</p> <p>Using Mathematics and Computational Thinking</p>	<p>ESS1.B: Earth and the Solar System</p>	<p>Patterns</p> <p>Cause and Effect</p>	
<p>Lesson 2</p> <p>Earth's Rotation & Daily Shadow Patterns</p> <p>Who set the first clock?</p>	<p>3.3.5.B. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p>	<p>ESS1.B: Earth and the Solar System</p>	<p>Patterns</p> <p>Cause and Effect</p>	
<p>Lesson 3</p> <p>Seasonal Changes & Shadow Length</p> <p>How can the Sun tell you the season?</p>	<p>3.3.5.B. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>Analyzing and Interpreting Data</p> <p>Engaging in Argument from Evidence</p>	<p>ESS1.B: Earth and the Solar System</p>	<p>Patterns</p> <p>Cause and Effect</p>	
<p>Lesson 4</p> <p>Seasonal Patterns & Earth's Orbit</p> <p>Why do the stars change with the seasons?</p>	<p>3.3.5.B. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>Developing and Using Models</p> <p>Constructing Explanations and Designing Solutions</p>	<p>ESS1.B: Earth and the Solar System</p>	<p>Patterns</p> <p>Cause and Effect</p>	
<p>Lesson 5</p> <p>Moon Phases, Lunar Cycle</p> <p>Why does the Moon change shape?</p>	<p>3.3.5.B. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>Developing and Using Models</p> <p>Planning and Carrying Out Investigations</p>	<p>ESS1.B: Earth and the Solar System</p>	<p>Patterns</p> <p>Cause and Effect</p>	

✓ Stars & Planets Unit (Stars & Planets)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 <p>Lesson 1</p> <p>Solar System & Sun Brightness</p> <p>How can the Sun help us explore other planets?</p>	<p>3.3.5.A. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</p>	<p>Developing and Using Models</p> <p>Engaging in Argument from Evidence</p>	<p>ESS1.A: The Universe and its Stars</p>	<p>Scale, Proportion, and Quantity</p> <p>Systems and System Models</p>	
 <p>Lesson 2</p> <p>Gravity</p> <p>Why is gravity different on other planets?</p>	<p>3.2.5.F. Support an argument that the gravitational force exerted by Earth on objects is directed down.</p>	<p>Using Mathematics and Computational Thinking</p> <p>Analyzing and Interpreting Data</p>	<p>PS2.B: Types of Interactions</p>	<p>Patterns</p> <p>Cause and Effect</p>	
 <p>Lesson 3</p> <p>Star Brightness & Habitable Planets</p> <p>Could there be life on other planets?</p>	<p>3.3.5.A. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</p>	<p>Obtaining, Evaluating, and Communicating Information</p> <p>Engaging in Argument from Evidence</p>	<p>ESS1.A: The Universe and its Stars</p>	<p>Scale, Proportion, and Quantity</p>	

Chemical Reactions & Properties of Matter Unit (Chemical Magic)

	Topic & Guiding Question	Pennsylvania STEELS Standards for Science (2023)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	Conservation of Matter Are magic potions real?	Foundational for 3.2.5.A. Develop a model to describe that matter is made of particles too small to be seen. Foundational for 3.2.5.D. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions	Cause and Effect Scale, Proportion, and Quantity
Lesson 2 	Dissolving & Particulate Nature of Matter Could you transform something worthless into gold?	3.2.5.A. Develop a model to describe that matter is made of particles too small to be seen. 3.2.5.D. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions	Energy and Matter Scale, Proportion, and Quantity
Lesson 3 	Properties of Matter: Acids What would happen if you drank a glass of acid?	3.2.5.B. Make and communicate observations and measurements to identify materials based on their properties.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	PS1.A: Structure and Properties of Matter	Cause and Effect
Lesson 4 	Chemical Reactions What do fireworks, rubber, and Silly Putty have in common?	3.2.5.E. Conduct an investigation to determine whether the mixing of two or more substances results in new substances. 3.2.5.C. Interpret and analyze data and observations to make decisions about how to utilize materials based on their properties.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	PS1.B: Chemical Reactions	Cause and Effect
Lesson 5 	Gases & Particle Models Why do some things explode?	3.2.5.A. Develop a model to describe that matter is made of particles too small to be seen.	Planning and Carrying Out Investigations Developing and Using Models	PS1.A: Structure and Properties of Matter	Scale, Proportion, and Quantity