



## **Grade 2 Science Curriculum**

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<b>Unit #/Title</b>	1/Animals	<b>Time Frame</b>	3-4 weeks
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## Stage 1 - Identify Desired Results

### Standards

- 3.1.2.A3** Identify similarities and differences in the life cycles of plants and animals.
- 3.1.2.C2** Explain that living things can only survive if their needs are being met.
- 3.1.2.C3** Constancy and change: Describe some plants and animals that once lived on Earth, (e.g., dinosaurs) but cannot be found anymore. Compare them to now living things that resemble them in some way (e.g. lizards and birds).
- 4.1.2.D** Identify differences in living things (color, shape, size, etc.) and describe how adaptations are important for survival.
- 4.1.2.E** Identify how living things survive changes in their environment.
- 3.1.4.B5** Patterns: Identify observable patterns in the physical characteristics of plants or groups of animals.
- 3.1.4.A8** Models: Construct and interpret models and diagrams of various animal and plant life cycles.

### Big Ideas

- Observing the similarities and differences in the appearance and behaviors of animals help us understand what they need to survive in a particular environment.
- Animals have specialized structures and behaviors that allow them to obtain what is necessary to live.
- Life cycles may be different for different animal types.

### Essential Questions

- Why is it important to know about the unique structures and behaviors of animals?
- How can you tell which animals live in a specific environment?

### Content

- Characteristics of vertebrates
- Characteristics of invertebrates
- Animal life cycles
- Animal habitats
- Survival needs of animals
- Living things from long ago
- Vocabulary: vertebrate, invertebrate, warm-blooded, cold-blooded, exoskeleton, endoskeleton

### Skills

- Identify the characteristics of vertebrates and invertebrates and their life cycles
- Explain what living things need to survive
- State how animals became extinct and compare them to current living things they resemble

<b>Unit #/Title</b>	2/Balance and Motion	<b>Time Frame</b>	5-7 weeks
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## Stage 1 - Identify Desired Results

### Standards

- 3.2.2.B2** Explore and describe how different forms of energy cause changes. (e.g., sunlight, heat, wind).  
**3.4.3.C1** Recognize design is a creative process and everyone can design solutions to problems.  
**3.4.3.C2** Explain why the design process requires creativity and consideration of all ideas.

<b>Big Ideas</b>	<b>Essential Questions</b>
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- There are different forms of energy. Each form has its own characteristics and properties.

- What makes a balanced system?
- What is needed to create a rotational motion?
- What is needed to change the way a system rolls?

<b>Content</b>	<b>Skills</b>
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- Objects can be balanced in many ways
- A stable position is one that is steady; the object is not falling over
- Counterweights can help balance an object
- A mobile is a system of balanced beams and objects
- Objects and systems that turn on a central axis exhibit rotational motion
- The amount and position of mass affect how an object rotates
- There are different ways to initiate rotational motion
- The motion of an object can be changed by pushing or pulling
- Wheels and spheres roll down a slope
- Axles support wheels
- Wheel-and-axle systems with wheels of different sizes roll toward the smaller wheel
- The amount of an added weight can change the way a system rolls
- Vocabulary: axle, balance, counterbalance, balance point, disk, mobile, motion, rotate, slope, sphere, spin, stability, wheel

- Create and observe balanced objects
- Create and observe stable balanced systems
- Compare balanced systems and representations of balanced systems
- Organize materials to make various balanced systems
- Communicate observations of balance and stability, using precise vocabulary
- Create and observe several expressions of rotational motion
- Compare the actions of several top designs
- Observe rotation of a system falling through air
- Organize materials to make systems that exhibit rotational motion
- Communicate observations and comparisons of rotational motion, using precise vocabulary
- Create and observe several expressions of linear motion
- Observe several kinds of objects and systems that roll
- Compare paths followed by rolling systems with different-sized wheels
- Organize materials to make systems that roll in different ways
- Communicate observations and comparisons of rolling motion, using precise vocabulary

<b>Unit #/Title</b>	3/Environmental Science/Ecology	<b>Time Frame</b>	2 weeks
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## Stage 1 - Identify Desired Results

### Standards

- 4.3.2.A** Describe the jobs/hobbies people have in the community that relate to natural resources.
- 4.3.2.B** Identify products and bi-products derived from renewable resources.
- 4.5.2.A** Identify the natural resources used to make various products.
- 4.5.2.C** Identify how people can reduce pollution.
- 4.5.2.D** Describe how people can help the environment by reducing, reusing, recycling and composting.
- 4.5.3.C** Identify different types of pollution and their sources.

<b>Big Ideas</b>	<b>Essential Questions</b>
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| <ul style="list-style-type: none"> <li>• The health of all living things is directly related to the quality of the environment.</li> <li>• People acting individually and/or as groups influence the environment on a daily basis.</li> </ul> | <ul style="list-style-type: none"> <li>• What is the impact of pollution on people and the environment?</li> <li>• Why is it important to reduce, reuse, and recycle and why doesn't everyone do it?</li> <li>• How do human actions affect the health of air, water, and land?</li> <li>• When is one form of energy best to use over another?</li> </ul> |
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<b>Content</b>	<b>Skills</b>
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| <ul style="list-style-type: none"> <li>• Pollution affects the environment</li> <li>• Reducing, reusing, and recycling helps the environment</li> <li>• We use both renewable and nonrenewable resources</li> <li>• Vocabulary: environment, waste, compactor, landfills, incinerator, recycling, renewable resource, nonrenewable resource, energy</li> </ul> | <ul style="list-style-type: none"> <li>• List examples of everyday human activities and describe how they affect the environment both positively and negatively</li> <li>• Describe the ways people pollute the environment and the consequences associated with these actions</li> <li>• Identify items that can be reduced, recycled, and reused in the local community, the school, and the classroom</li> <li>• Identify and compare and contrast renewable and nonrenewable resources</li> </ul> |
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<b>Unit #/Title</b>	4/Seasons and the Sun	<b>Time Frame</b>	2 weeks
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## Stage 1 - Identify Desired Results

### Standards

- 3.3.2.B1** Observe and record location of the Sun and the Moon in the sky over a day. Changes in the appearance of the Moon over a month. Observe, describe, and predict seasonal patterns of sunrise and sunset.
- 3.3.1.B1** Explain why shadows fall in different places at different times of the day.

<b>Big Ideas</b>	<b>Essential Questions</b>
<ul style="list-style-type: none"> <li>There are observable, predictable patterns of movement in the Earth, Moon, and Sun system that account for day and night.</li> </ul>	<ul style="list-style-type: none"> <li>How do the interactions between the Earth, Moon, and Sun account for changes on Earth?</li> </ul>
<b>Content</b>	<b>Skills</b>
<ul style="list-style-type: none"> <li>The tilt of the earth's axis and revolution around the sun cause the seasons</li> <li>Vocabulary: axis, equator, rotate, revolve</li> </ul>	<ul style="list-style-type: none"> <li>Define axis, equator, rotate, revolve</li> <li>Demonstrate how the earth is tilted on its axis, rotates on its axis, and revolves around the sun</li> <li>Describe the affect the tilted axis has on seasons</li> </ul>

<b>Unit #/Title</b>	5/Soils	<b>Time Frame</b>	6 weeks
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## Stage 1 - Identify Desired Results

### Standards

- 3.1.2.A3** Identify similarities and differences in the life cycles of plants and animals.
- 3.1.2.A5** Explain how different parts of a plant work together to make the organism function.
- 3.1.2.C2** Explain that living things can only survive if their needs are being met.
- 3.2.2.B6** Energy - Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow.
- 3.3.K.A1** Distinguish between three types of earth materials – rock, soil, and sand.
- 4.4.4.C** Use scientific inquiry to investigate the composition of various soils.
- 4.4.5.C** Investigate the factors influencing plant and animal growth (e.g., soil, water, nutrients, and light).
- 3.3.1.A1** Observe, describe, and sort earth materials and compare the composition of different soils.
- 4.4.2.E** See science as inquiry in the introduction for grade level indicators (as indicated on page 4).
- 4.4.2.A** Identify agriculture as a living system and that food and fiber originate from plants and animals.
- 4.4.2.B** Explain how agriculture supports jobs in Pennsylvania.
- 3.3.3.A1** Explain and give examples of the ways in which soil is formed.
- 4.4.1.A** Describe the role of soil in agricultural systems.

Big Ideas	Essential Questions
<ul style="list-style-type: none"> <li>• Soil is a mixture of various components, which have unique properties that we can identify.</li> <li>• The properties of soil determine how water and plants interact with soil.</li> </ul>	<ul style="list-style-type: none"> <li>• How do the components of soil act and interact to affect plant and root growth?</li> </ul>

Content	Skills
<ul style="list-style-type: none"> <li>• Soil contains particles of different sizes</li> <li>• Soil may contain animals, plants, and their remains</li> <li>• Over time, dead plants become part of soil</li> <li>• Composting, especially with worms, is an effective way to recycle old pants and other discarded organic matter</li> <li>• Sand, clay, and humus are three basic components of soil</li> <li>• Every soil component has unique properties that can be identified using simple tests</li> <li>• Different soils absorb water at different rates</li> <li>• Many factors, including soil, affect plant and root growth</li> <li>• Vocabulary: component, compost, decay, decomposers, hummus, inorganic matter, investigate, observe, organic matter, predict, silt, soil, texture</li> </ul>	<ul style="list-style-type: none"> <li>• Perform simple tests to describe and identify soil components</li> <li>• Observe, record, and organize test results</li> <li>• Interpret test results to draw conclusions about soil composition</li> <li>• Reflect on test results to predict how plants will grow in different soils</li> <li>• Assemble laboratory materials for soil experiments</li> <li>• Communicate results and ideas through writing, drawing, and discussion</li> <li>• Apply previously learned concepts and skills to analyze unfamiliar soil samples</li> </ul>

<b>Unit #/Title</b>	6/Water Cycle	<b>Time Frame</b>	2 weeks
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## Stage 1 - Identify Desired Results

### Standards

**3.2.2.A3** Demonstrate how heating and cooling may cause changes in the properties of materials.  
**3.3.2.A4** Explore and describe that water exists in solid (ice) and liquid (water) form. Explain and illustrate evaporation and condensation.  
**4.2.1.A** Explain the path water takes as it moves through the water cycle.

<b>Big Ideas</b>	<b>Essential Questions</b>
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| <ul style="list-style-type: none"> <li>• Water cycles are important to our natural world.</li> </ul> | <ul style="list-style-type: none"> <li>• What form does water take on our earth?</li> <li>• What happens daily to the water on earth?</li> <li>• How does water change from a solid to a liquid to a gas?</li> <li>• How are clouds formed?</li> <li>• What are forms of precipitation?</li> </ul> |
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<b>Content</b>	<b>Skills</b>
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| <ul style="list-style-type: none"> <li>• Water can be changed from one state to another by heating and cooling</li> <li>• Water in its three states moves from one place on Earth to another in a continuous cycle called the water cycle</li> <li>• The water cycle includes the processes of evaporation, condensation, precipitation, and run-off/melting</li> <li>• Vocabulary: precipitation, evaporation, condensation, water vapor</li> </ul> | <ul style="list-style-type: none"> <li>• Create a model of the water cycle</li> <li>• Describe the relationship of water to weather</li> <li>• Identify the various types of precipitation</li> <li>• Explain how water changes states form one form to another</li> </ul> |
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