

**Berlin Brothersvalley School District  
Berlin Brothersvalley Elementary School  
Grade 1 Science Curriculum Framework  
Full Year Course**

<b>Big Idea(s) for 1st nine weeks</b>	<b>Concept(s) of 1st nine weeks</b>	<b>Competencies of 1st nine weeks</b>	<b>Essential Questions for 1st nine weeks</b>
<p>Organisms share similarities with parents yet have differences and continue to develop and mature.</p> <p>Organisms have characteristic structures, functions, and behaviors that allow them to grow, reproduce, and die.</p> <p>Through observations, humans have learned that some structures of organisms meet their environmental needs so much so that humans mimic these structures to solve human problems.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● the external structures of organisms</li> <li>● the characteristics and traits of mature (parent) plants and animals vs. young plants and animals</li> <li>● the behaviors that may influence the survival of plant and animal offspring</li> <li>● human problems can sometimes be solved by mimicking plants or animals</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● compare and contrast the external structures of organisms</li> <li>● analyze the characteristics and traits of mature (parent) plants and animals vs. young plants and animals</li> <li>● identify, determine, and explain the behaviors that may influence the survival of plant and animal offspring</li> <li>● brainstorm and create a list of human inventions that borrow from or mimic adaptations found in nature</li> <li>● design a device that would solve a human problem by mimicking plants or animals</li> </ul>	<p>How are mature plants and animals the same and different from their offspring?</p> <p>What are the external structures of organisms that help them function?</p> <p>In what ways do organisms behave to aid in their survival?</p> <p>What human problems have been solved by mimicking plants' and animals' features?</p>
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p style="text-align: center;">Organisms</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">9 weeks</p>	<p style="text-align: center;"><b><u>PA STEELS Standards</u></b></p> <p style="text-align: center;">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.</p>	<p style="text-align: center;"><b><u>Clarifying Statement and Assessment Boundary</u></b></p> <p>3.1.1.A Clarifying Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to</p>

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 Full Year Course**

		<p>3.1.1.B Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</p> <p>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.</p>	<p>protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.</p> <p>3.1.1.A Assessment Boundary: N/A</p> <p>3.1.1.B Clarifying Statement:        Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).</p> <p>3.1.1.B Assessment Boundary: N/A</p> <p>3.1.1.C Clarifying Statement:        Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.</p>
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**Berlin Brothersvalley School District  
Berlin Brothersvalley Elementary School  
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Full Year Course**

			3.1.1.C Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.
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Big Idea(s) for 2nd nine weeks	Concept(s) of 2nd nine weeks	Competencies of 2nd nine weeks	Essential Questions for 2nd nine weeks
<p>Environmental areas have various functions and can be viewed differently depending on one's culture.</p> <p>Light impacts seasons, which include growing seasons, and is essential for all living things.</p> <p>Light causes materials to respond differently according to their characteristics.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● views about nature and the environment often differ depending on a group's culture and beliefs</li> <li>● the importance of different environmental areas in the local community</li> <li>● the illumination of objects depends on an external light or the ability to produce its own</li> <li>● the earth's rotation and position relative to the sun act together to produce darkness and light</li> <li>● the location of the sun during various times of day</li> <li>● the amount of daily sunlight varies during different seasons of the year</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● compare and contrast views about nature and the environment and explain how they often differ depending on a group's culture and beliefs</li> <li>● determine and explain the importance of different environmental areas in the local community</li> <li>● demonstrate how objects can be seen when illuminated</li> <li>● create a diagram showing how the earth's rotation and position relative to the sun produce darkness and light</li> <li>● identify the location of the sun during various times of day</li> <li>● conduct an ongoing investigation to track the amount of daily sunlight during</li> </ul>	<p>How does our view of nature and the environment compare with other cultural areas?</p> <p>What are different environmental areas around us and what are their purposes and functions?</p> <p>How does light affect how objects are seen?</p> <p>How does the earth's rotation and the position of the sun create light and darkness?</p> <p>Where is the position of the sun in the morning, at noon, and in the evening?</p> <p>How does the amount of sunlight change during different seasons?</p>

**Berlin Brothersvalley School District  
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 Grade 1 Science Curriculum Framework  
 Full Year Course**

	<ul style="list-style-type: none"> <li>the effect of placing different materials in a beam of light</li> </ul>	<ul style="list-style-type: none"> <li>different seasons of the year</li> <li>sort and label different materials as either transparent, translucent, opaque, or reflective</li> </ul>	What materials allow light to pass through them?
<p><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Environment and Society and Environmental Experiences</p>	<p><b><u>Approx # of weeks - % of time</u></b></p> <p>4.5 weeks</p>	<p><b><u>PA STEELS Standards</u></b></p> <p>3.4.K-2.B Examine how people from different cultures and communities, including one's own, interact and express their beliefs about nature.</p> <p>3.4.K-2.C Explain ways that places differ in their physical characteristics, their meaning, and their value and/or importance.</p>	<p><b><u>Clarifying Statement and Assessment Boundary</u></b></p> <p>3.4.K-2.B Clarifying Statement: Emphasis is on how students' interactions and beliefs about nature compare to someone living in a different community. Emphasis is not on judging anyone's interactions or beliefs about nature.</p> <p>3.4.K-2.B Assessment Boundary: N/A</p> <p>3.4.K-2.C Clarifying Statement: Emphasis is on making observations of local environments such as schoolyards, streams, mountains, and fields and sharing their value or meaning. Examples of value or meaning could be their recreational, esthetic (aesthetic), economic, and ecological importance, such as providing a home for animals.</p> <p>3.4.K-2.C Assessment Boundary: N/A</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Elementary School  
 Grade 1 Science Curriculum Framework  
 Full Year Course**

<u>Unit/Chapter/Selection of Study</u>	<u>Approx # of weeks - % of time</u>	<u>PA STEELS Standards</u>	<u>Clarifying Statement and Assessment Boundary</u>
<p style="text-align: center;">Light</p>	<p style="text-align: center;">4.5 weeks</p>	<p>3.2.1.B Make observations to construct an evidence- based account that objects can be seen only when illuminated.</p> <p>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.</p> <p>3.3.1.A Use observations of the sun, moon, and stars to describe patterns that can be predicted.</p>	<p>3.2.1.B Clarifying Statement:          Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.</p> <p>3.2.1.B Assessment Boundary: N/A</p> <p>3.2.1.C Clarifying Statement:          Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).</p> <p>3.2.1.C Assessment Boundary:          Assessment does not include the speed of light.</p> <p>3.3.1.A Clarifying Statement:          Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not</p>

**Berlin Brothersvalley School District  
Berlin Brothersvalley Elementary School  
Grade 1 Science Curriculum Framework  
Full Year Course**

		<p>3.3.1.B Make observations at different times of year to relate the amount of daylight to the time of year.</p>	<p>during the day.</p> <p>3.3.1.A Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.</p> <p>3.3.1.B Clarifying Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.</p> <p>3.3.1.B Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.</p>
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**Berlin Brothersvalley School District  
Berlin Brothersvalley Elementary School  
Grade 1 Science Curriculum Framework  
Full Year Course**

<b>Big Idea(s) for 3rd nine weeks</b>	<b>Concept(s) of 3rd nine weeks</b>	<b>Competencies of 3rd nine weeks</b>	<b>Essential Questions for 3rd nine weeks</b>
<p>Materials, despite having varying attributes, can meet the same goal.</p> <p>Collaborating with others is an essential skill for success.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● materials have different attributes</li> <li>● different materials meet different goals</li> <li>● which structural components have properties that aid construction</li> <li>● which materials are best to meet different building goals</li> <li>● different structures can meet the same goal</li> <li>● peer collaboration techniques</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● sort material based upon their attributes</li> <li>● examine and select a variety of materials</li> <li>● create a structure that meets a designated goal (i.e. tallest, strongest)</li> <li>● judge which materials are best to meet different building goals</li> <li>● justify and critique their own materials used in the building of the structure with others</li> <li>● discuss how structures whether the same or different meet the designated goals</li> <li>● collaborate with peers on one design</li> <li>● discover the qualities of different materials through play</li> </ul>	<p>What attributes do you observe in various materials?</p> <p>Why would you use certain materials to create a structure?</p> <p>Why do different structures still meet the same goal?</p> <p>How should teams work together to achieve a goal?</p>
<p><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Solids</p> <ul style="list-style-type: none"> <li>● Building Towers</li> </ul>	<p><b><u>Approx # of weeks - % of time</u></b></p> <p>9 weeks</p>	<p><b><u>PA STEELS Standards</u></b></p> <p>3.5.K-2.B Describe qualities of everyday products.</p>	<p><b><u>Clarifying Statement and Assessment Boundary</u></b></p> <p>3.5.K-2.B Clarifying Statement: Technology assessment, or the ability to critically analyze a technology's effectiveness, is a skill that should be introduced early and consistently. Is a</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Elementary School  
 Grade 1 Science Curriculum Framework  
 Full Year Course**

		<p>3.5.K-2.M Demonstrate essential skills of the engineering design process.</p> <p>3.5.K-2.O Illustrate that there are different solutions to a design and that none are perfect.</p> <p>3.5.K-2.P Discuss that all designs have different characteristics that can be described.</p>	<p>lunchbox hard or soft, metal or plastic, insulated or not? Is there enough space inside for the items brought for lunch?</p> <p>3.5.K-2.B Assessment Boundary: N/A</p> <p>3.5.K-2.M Clarifying Statement: Young children identify that there are some essential skills, such as creative thinking, building, and testing, that are required to succeed in technology and engineering design.</p> <p>3.5.K-2.M Assessment Boundary: N/A</p> <p>3.5.K-2.O Clarifying Statement: Young children recognize that there is more than one plausible solution to a design challenge.</p> <p>3.5.K-2.O Assessment Boundary: N/A</p> <p>3.5.K-2.P Clarifying Statement: Young children recognize and categorize basic features of design, which represent principles and elements of design. In drawing, they begin to differentiate between lines, colors, and shapes. In thinking about early ideas on design, they might brainstorm with other children, draw sketches, and</p>
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 Berlin Brothersvalley Elementary School  
 Grade 1 Science Curriculum Framework  
 Full Year Course**

		<p>3.5.K-2.S Apply design concepts, principles, and processes through play and exploration</p> <p>3.5.K-2.T Demonstrate that designs have requirements.</p> <p>3.5.K-2.U Explain that design is a response to wants and needs</p>	<p>see how well their ideas worked out.</p> <p>3.5.K-2.P Assessment Boundary: N/A</p> <p>3.5.K-2.S Clarifying Statement: Design experiences build on young children’s natural curiosity, desire to explore, and persistence. Familiar materials, tools, and environments will enhance these experiences.</p> <p>3.5.K-2.S Assessment Boundary: N/A</p> <p>3.5.K-2.T Clarifying Statement: Young children recognize that all designs must meet certain expectations. These expectations are related to the purpose, function, and requirements of a solution.</p> <p>3.5.K-2.T Assessment Boundary: N/A</p> <p>3.5.K-2.U Clarifying Statement: Young children begin to understand that design is driven by wants and needs. These wants and needs often derive from familiar environments such as home, school, and community.</p>
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**Berlin Brothersvalley School District  
 Berlin Brothersvalley Elementary School  
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 Full Year Course**

		<p>3.5.K-2.V Explain that materials are selected for use because they possess desirable properties and characteristics.</p> <p>3.5.K-2.DD Collaborate effectively as a member of a team.</p>	<p>3.5.K-2.U Assessment Boundary: N/A</p> <p>3.5.K-2.V Clarifying Statement: Paper, wood, cloth, cardboard, and found objects are the most common materials young children use in making the items they design. By working with materials, they learn through observation and testing which materials perform better for given tasks.</p> <p>3.5.K-2.V Assessment Boundary: N/A</p> <p>3.5.K-2.DD Clarifying Statement: To operate at the most effective level, team members must learn to communicate and work together as a unit. Strategies to work together in a team must be modeled by the teacher and laid out as an expectation within the laboratory-classroom setting.</p> <p>3.5.K-2.DD Assessment Boundary: N/A</p>
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**Berlin Brothersvalley School District  
Berlin Brothersvalley Elementary School  
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Full Year Course**

<b>Big Idea(s) for 4th nine weeks</b>	<b>Concept(s) of 4th nine weeks</b>	<b>Competencies of 4th nine weeks</b>	<b>Essential Questions for 4th nine weeks</b>
<p>Sound or light waves are repeating patterns of motion that transfer energy and information without transferring matter.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● sounds can cause materials to vibrate</li> <li>● vibrating materials can cause sound</li> <li>● sound or light can be used to communicate over a distance</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● demonstrate that sounds can cause materials to vibrate</li> <li>● investigate how vibrating materials can cause sound</li> <li>● design and engineer a device that uses either sound or light to communicate over a distance</li> </ul>	<p>How does sound cause vibrations?</p> <p>Why do vibrating materials cause sound?</p> <p>How can light and sounds be used to send messages?</p>
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p style="text-align: center;">Sound</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">9 weeks</p>	<p style="text-align: center;"><b><u>PA STEELS Standards</u></b></p> <p>3.2.1.A Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</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</p>	<p style="text-align: center;"><b><u>Clarifying Statement and Assessment Boundary</u></b></p> <p>3.2.1.A Clarifying Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.</p> <p>3.2.1.A Assessment Boundary: N/A</p> <p>3.2.1.D Clarifying Statement: Examples of devices could include a light source to send signals, paper</p>

**Berlin Brothersvalley School District  
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		<p>communicating over a distance.</p>	<p>cup and string “telephones,” and a pattern of drum beats.</p> <p>3.2.1.D Assessment Boundary:          Assessment does not include technological details for how communication devices work.</p>
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Standards Legend: Essential Important Supplementary

Revised 6/13/24