



Unfield Trip Resources
Next Generation Science
Standards: 2nd-3rd Grade
Connections to Amazeum Exhibit
Galleries

Second Grade:

Nickelodeon

Structure and Properties of Matter

- 2-PS1-1 – Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 2-PS1-3 – 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.

- PS1.A: Structure and Properties of Matter

- Different kinds of matter exist and many of them can either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1)
- Different properties are suited to different purposes. (2-PS1-2), (2-PS1-3)
- A great variety of objects can be built up from a small set of pieces.

Engineering, Technology, and Applications of Science

- 2-ETS1-1 – Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- 2-ETS1-2 – Develop a sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- 2-ETS1-3 – Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
- ETS1.A: Defining and Delimiting Engineering Problems
 - A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)
 - Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1)
 - Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)
- ETS1.B: Developing Possible Solutions
 - Designs can be conveyed through sketches, drawing, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)
- ETS1.C: Optimizing the Design Solution
 - Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

Nature Valley Water Amazements

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General Mills Lift, Load, & Haul

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Cave & Canopy Climber

Interdependent Relationships in Ecosystems

- 2-LS2-1 – Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- 2-LS2-2 – Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- LS2.A: Interdependent Relationships in Ecosystems
 - Plants depend on water and light to grow. (2-LS2-1)

- Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)
- 2-LS4-1 – Make observations of plants and animals to compare the diversity of life in different habitats.
- LS4.D: Biodiversity and Humans
 - There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

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Structure and Properties of Matter

- 2-PS1-4 – Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
- PS1.B: Chemical Reactions
 - Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)

The Homestead Cabin & Farm

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Art Studio

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3M Tinkering Hub

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Outdoor Playscape

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Earth's Systems: Processes that Shape the Earth

- 2-ESS1-1 – Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
- 2-ESS2-1 – Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- 2-ESS2-2 – Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS2-3 – Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- ESS1.C: The History of Planet Earth
 - Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)
- ESS2.A: Earth Materials and Systems
 - Wind and water can change the shape of the land. (2-ESS2-1)
- ESS2.B: Plate Tectonics and Large-Scale System Interactions
 - Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)
- ESS2.C: The Roles of Water in Earth's Surface Processes

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice in liquid form. (2-ESS2-3)
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Energizer Weather & Nature

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Third Grade:

Nickelodeon

Forces and Interactions

- 3-PS2-1 – Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-PS2-2 – Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- 3-PS2-3 – Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- PS2.A: Forces and Motion
 - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero and cause changes in the object's speed or direction of motion. (3-PS2-1)
 - The pattern of an object's motion in various situations can be observed and measured; when the past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed. (3-PS2-2)
- PS.B: Types of Interactions
 - Objects in contact exert forces on each other. (3-PS2-1)
 - Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3, 3-PS2-4)

Nature Valley Water Amazements

Force and Interactions

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Cave & Canopy Climber

Interdependent Relationships in Ecosystems

- 3-LS2-1 – Construct an argument that some animals form groups that help members survive.
 - 3-LS4-3 – 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.
 - 3-LS4-4 – Make a claim 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.
 - LS2.C: Ecosystem Dynamics, Functioning, and Resilience
 - When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, some die. (3-LS4-4)
 - LS2.D: Social Interactions and Groups
 - Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (3-LS2-1)
 - LS4.A: Evidence of Common Ancestry and Diversity
 - Some kinds of plants and animals that once lived on earth are no longer found anywhere. (3-LS4-1)
 - Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)
 - LS4.C: Adaptation
 - For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)
- #### Inheritance and Variation of Traits: Life Cycles and Traits
- 3-LS1-1 – Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
 - 3-LS3-1 – 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.

- 3-LS3-2 – Use evidence to support the explanation that traits can be influenced by the environment.
- 3-LS4-2 – Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- LS1.B: Growth and Development of Organisms
 - Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)
- LS3.A: Inheritance of Traits
 - Many characteristics of organisms are inherited from parents. (3-LS3-2)
 - Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and learning. (3-LS3-2)
- LS3.B: Variation of Traits
 - Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)
 - The environment also affects the traits that an organism develops. (3-LS3-2)
- LS4.B: Natural Selection
 - Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)

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N/A

The Homestead Cabin & Farm

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Art Studio

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3M Tinkering Hub

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- 3-ETS1-2 – Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- ETS1.A: Defining and Delimiting Engineering Problems
 - Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-ETS1-1)
- ETS1.B: Developing Possible Solutions
 - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-ETS1-2)
 - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-ETS1-2)
 - Test are often designed to identify failure points or difficulties, which suggest the elements of design that need to be improved. (3-ETS1-3)
- ETS1.C: Optimizing the Design Solution
 - Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-ETS1-3)

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- 3-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- ETS1.A: Defining and Delimiting Engineering Problems
 - Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-ETS1-1)
- ETS1.B: Developing Possible Solutions
 - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-ETS1-2)
 - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-ETS1-2)
 - Test are often designed to identify failure points or difficulties, which suggest the elements of design that need to be improved. (3-ETS1-3)
- ETS1.C: Optimizing the Design Solution
 - Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-ETS1-3)

Energizer Weather & Nature

Weather and Climate

- 3-ESS2-1 – Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- 3-ESS2-2 – Obtain and combine information to describe climates in different regions of the world.
- 3-ESS3-1 – Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.
- ESS2.D: Weather and Climate
 - Scientists can record patterns of the weather across different time and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)

- Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)
- ESS3.B: Natural Hazards
 - A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impact. (3-ESS3-1)