

2nd Grade Scope & Sequence

Units 1-4: Inquiry and Design

Inquiry and design runs through each unit. Please see the following:

- K-5 Scope and Sequence (please see the Inquiry & Design section):
http://static.pdesas.org/content/documents/CF-Science_K-5_Scope_Sequence.pdf
- Inquiry Design & Big Idea and Essential Questions:
http://static.pdesas.org/content/documents/CF-Science_LTTG_BI_EQ_Inquiry.pdf
- K-12 Inquiry and Design (Science Practices)
http://static.pdesas.org/content/documents/CF_Science_K-12_Inquiry_Design_Continuum.pdf
- Framework with Connected with Standards
http://static.pdesas.org/content/documents/CF-Science_Grade2.pdf

Unit 1: Physical Science: Structures and Properties of Matter: (1st MP Approximately 6 weeks)

Report card standard:

-Explain the structure, properties and interactions of matter.

Big Idea	Essential Questions	Concepts	Competencies	Vocabulary
Matter can be understood in terms of the types of atoms present and the interactions both between and within atoms.	How can one explain the structure, properties, and interactions of matter?	Different kinds of matter exists in various states	Observe, describe, and classify matter by properties and uses (e.g. size, shape, weight, solid, liquid, gas)	Classify Describe Gas Liquid Matter Patterns Solid Weight
		Matter can be described and classified by its observable properties	Observe, describe, and classify matter by properties and uses (e.g. size, shape, weight, texture, flexibility, hardness, color, etc)	Color Flexibility Gas Liquid Matter

2nd Grade Scope & Sequence

				Properties Solid Texture Weight
		Different kinds of matter exist in various states, depending on temperature	Plan and carry out investigations to test the idea that warming some materials causes them to change from solid to liquid and cooling causes them to change from liquid to solid.	Investigation Liquid Solid
		Matter can be described and classified by its observable properties		Liquid Solid
		Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.	Construct an argument and provide evidence that some changes caused by heating or cooling can be reversed and some cannot	Argument Boiling Cause and effect Evidence Freezing Melting Reverse
		Different properties are suited for different purposes.	Analyze data from testing objects made from different materials to determine if a proposed object functions as intended.	Data Functions Test
		A great variety of objects can be built up from a small set of pieces.	Design an object built from a small set of pieces to solve a problem and compare solutions designed by peers given the same set of pieces.	Construct Design Engineer Problem solving Solutions
			Make observations of how an object made of small set of pieces can be disassembled and made into a new	Construct Design Disassemble

2nd Grade Scope & Sequence

			object.	Engineer Problem solving Solutions
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Unit 2: Earth and Space Science- Earth's Systems; Processes that shape the Earth (2nd & 3rd MP Approximately 6 weeks)

Report Card Standards:

- Explain how and why the Earth constantly changes
- Explain how Earth's processes and human activities affect each other

Big Idea	Essential Questions	Concepts	Competencies	Vocabulary
The Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.	How and why is Earth constantly changing?	Earth has changed over time with some changes being rapid and others being slow. Sometimes changes occur over a longer period of time than one may be able to observe.	Make observations from multiple sources to provide evidence that Earth's events can occur quickly or slowly.	Erosion Weathering
		Wind and water change the shape of the landscape.	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Earth materials Erosion Landform Weathering
		Maps display different land and water features and help show patterns in the distribution of rocks and other geological and geographical features.	Describe kinds and shapes of patterns of landforms and bodies of water	Geographic Geologic Geological Lentic Lotic Map Pennsylvania features
		Maps show where things are located. One can map the shapes and kinds of land and water in an area.	Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Model
		Water is found in the ocean, rivers,	Investigate and represent the various	Accumulation

2nd Grade Scope & Sequence

		lakes, ponds, and as groundwater beneath the surface. Water exists as solid ice, in liquid form, and as a vapor Water is found in the ocean, rivers, lakes, ponds, and as groundwater beneath the surface. Water exists as solid ice, in liquid form, and as a vapor.	forms of water in their local environment, on Earth, and also on other planets and moons. Use observations to construct explanations that water exists in different forms in natural landscapes.	Condensation Earth Evaporation Groundwater Lake Landscape Liquid Moon Ocean Planet Pond Precipitation River Solid/ice Types of clouds Vapor/Gas
			Use observations to construct explanations that water exists in different forms in natural landscapes.	Accumulation Earth Groundwater Ice Lake Landscape Liquid Moon Ocean Planet Pond River Solid
The Earth's processes affect and are affected by human activities	How do Earth's processes and human activities affect each other?	All materials, energy, and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways	Investigate what resources are used in the construction of buildings, preparation of food, transportation, and other aspects of the community.	Community Energy Materials Resources

2nd Grade Scope & Sequence

				Transportation
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Unit 3 Life Science- Interdependent Relationships in Ecosystems (4th MP Approximately 7 weeks)

Report Card Standards

- Explains how living things depend upon one another
- Explains how the environment affects the organisms living there, and can affect their survival

Big Idea	Essential Questions	Concepts	Competencies	Vocabulary
Organisms grow, reproduce, and perpetuate their species by obtaining necessary resources through interdependent relationships with other organisms and the physical environment.	How and why do organisms interact with their environment and what are the effects of these interactions?	Animals can move around, but plants cannot, and they often depend on animals for pollination or seed dispersal.	Develop a model to demonstrate different modes of seed dispersal. Plan and investigate effectiveness of different types of seed dispersal.	Pollination Seed dispersal
		Different plants survive better in different settings because they have varied needs for water, minerals, and sunlight.	Plan and carry out investigations to test whether plants from different settings have different needs for water, sunlight, and type of soil.	Soil Sunlight Minerals Water
		Organisms obtain the materials they need to grow and survive from their environment.	Obtain, evaluate, and communicate information that in any particular environment, some kinds of organisms survive well and some do not.	Environment Survive

2nd Grade Scope & Sequence

		Plants depend on water and light to grow.	Plan and conduct an investigation to determine if plants need sunlight and water to grow.	Minerals Soil Sunlight Water
Biological evolution explains both the unity and diversity of species and provides a unifying principle for the history and diversity of life on Earth.	How can there be so many similarities among organisms yet so many different kinds of plants, animals, and microorganisms?	Living things can survive only where their needs are met.	Construct an explanation about why living things can only survive where their needs are met.	Biodiversity Microorganisms Needs Organism Survive
		There are many different kinds of living things in any area, and they exist in different places on land and in water.	Observe and compare the different kinds of living things that are found in different habitats.	Biodiversity Exist Habitats Land Living things Water