

Second Grade

Earth Systems

Core Concepts

1. Know that wind and water can change the shape of the land quickly or slowly.
2. Know that maps show where things are located.
3. Map the shapes and kinds of land and water in any area.
4. Know that water is found in the ocean, rivers, lakes, and ponds.
5. Know that water exists in solid and liquid form.
6. Know there is always more than one possible solution to a problem. It is useful to test and compare designs.

Essential Vocabulary

Coast	Condensation	Erosion	Evaporation	Freezing Point
Landforms	Legend	Liquid	Map	Mountains
Piedmont	Precipitation	Solid	Water Bodies	Wind

STEM Fair Ideas

1. Which type of soil/rock erodes the fastest with water?
2. Which type of soil/rock erodes the fastest with wind?
3. How does the strength/speed/intensity of water or wind affect the rate of erosion?
4. How do plants affect how quickly soil erodes with water?
5. How do plants affect how quickly soil erodes with wind?
6. Does the size of a glacier (or iceberg) affect how quickly it melts?
7. Does the shape of a glacier (big and thin versus small and thick) affect how quickly it melts?
8. Does pressure affect how quickly ice melt?
9. How do different substances (sugar, salt, juice, etc) affect how quickly water freezes.
10. How do different substances (sugar, salt, juice, etc.) affect how quickly ice melts?
11. What is the effect of cup material (glass/metal/plastic) on how quickly ice melts?
12. What is the effect of soil saturation on the speed of erosion?
13. How does salt in the ocean affect the properties of water?
14. How does freezing water cause erosion?

Second Grade

Matter and Its Interaction

Core Concepts

1. Know that different kinds of matter exist and many of them can be either solid or liquid, depending on temperature.
2. Describe and classify matter by its observable properties.
3. A great variety of objects can be built from a small set of pieces.
4. Know that heating or cooling a substance may cause changes that can be observed. Some changes are reversible and some are not.
5. Know that earth materials have properties that make them useful to us.
6. Know that earth materials can be changed to make them more useful to us.
7. Use the Engineering Design Process as an organized way to study a problem and identify and create possible solutions.

Essential Vocabulary

Architect	Chemical Reaction	Durable	Durability	Engineers
Fair Test	Force	Matter	Reversible Change	
Mortar	Stability	Structure	Observable Property	

STEM Fair Ideas

1. How does temperature affect whether water is solid, liquid, or gas?
2. Do all liquids become solid at the same temperature?
3. If gases are invisible, how do we know they exist?
4. Which type of paper towel is the most durable?
5. Create natural paints using plants, minerals, etc. from nature.
6. Develop a flow chart with tests to determine if a substance is salt, sugar, baking soda, baking powder, water, vinegar, oil, baking soda, flour, etc.
7. Test a variety of substances in water. Which items show a physical reaction? Which items show a chemical reaction? Let those substances remain in the water for a couple days. What happened to each of the physical reactions?
8. Heat a variety of substances with adult supervision (egg, chocolate, bread, water, etc). Which items show a physical reaction? Which items show a chemical reaction? Can you get the physical reactions to reverse back to their original state?

Second Grade

Waves

Core Concepts

1. Know that sounds are made from vibrations.
2. Design simple tests to gather evidence to support or refute ideas about causes.
3. Know that objects can be seen in light if they give off their own light.
4. Make observations to construct an evidence based account for natural phenomena.
5. Know that mirrors can be used to redirect a light beam.
6. Know that a material changes the direction of the light and can light up the surrounding space in a different direction.
7. Collaboratively investigate to produce evidence to answer a question.
8. Use tools and materials provided to diagnose a device that solves a specific problem.
9. Know that people also use a variety of devices to communicate over long distances.

Essential Vocabulary

Absorb	Illuminate	Light	Light Beam	Light Path
Man Made Light	Natural Light	Opaque	Reflect	Semaphore
Signal	Sound	Translucent	Transmit	Transparent
Vibrations	Visible			

STEM Fair Ideas

1. How are sounds made? Can you show that sounds are made from vibrations?
2. What changes the pitch of a sound? Can you show how to make high and low sounds using the same method? What has to change to make different sounds?
3. How do different materials (glass, plastic, felt, cardboard, etc) affect sound? What types of materials make sounds louder and what types of materials dampen sound?
4. How far can sound travel?
5. Can sound travel further if you use two cups and a string as a telephone? If so, what types of cups and string work the best?
6. Does light or sound travel faster/further through the air?
7. How does a mirror affect the path of a beam of light? Can multiple mirrors be used to direct light in different directions?
8. How do opaque, translucent, and transparent materials affect a beam of light?