

Earth Science Introductory/Extension Activities

Activities you can use to introduce or extend the scientific concepts addressed in the following Exploration Cards:



Science is in...
A Rock Walk
Way Matter Settles
Air You Breathe
Evaporation
Rock Collecting
Erosion
Aerial Photographs

Activity Preview

Rock Collecting: Share a book and discuss how the main character finds rocks.

Rock Find: Practice describing a rock, and picking out rocks using one another's descriptions.

What is Air?: Observe some often-unnoticed characteristics of air.

Crystals Up Close: Explore the characteristics of crystals by observing some everyday varieties.

Erosion Table: Use this model system to observe the interactions of water and soil.

Aerial Drawing: Create an overhead drawing of your erosion table, and help kids understand what topographic maps represent.

Shell Fossils: Produce a model fossil in a lot less time than it takes the earth create a real fossil.

What is Air?

Materials

balloons, straws, sand or water

What to do

Blow up a balloon and hold the end shut. Ask students if they can guess what is inside. *How do we know something exists if we can't see it, taste it, or smell it? What evidence can we gather to prove that air exists?*

Give students materials like sand, water, straws or other materials of your choosing. Challenge them to prove that air exists.

Together, make a list of ways that you can observe air.

Supporting Science Information

Air is a gas, one of the three states of matter: solid, liquid and gas. Air is colorless and odorless, but does have mass and exerts force. Although we can not see air, we can tell that it exists because of its effects on the world around us. We see air blow the leaves on trees in the form of wind, or can use air to fill a rubber balloon.

Rock Collecting

Materials

Everybody Needs a Rock, by Byrd Baylor

What to do

Read the book *Everybody Needs a Rock* out loud to your students.

Discuss how the main character goes about finding rocks. *Where does she go to find rocks? What characteristics of rocks does the character observe?* Discuss some places where your students might find rocks.

Rock Find

Materials

rocks, index cards

What to do

Divide the class into groups of two. Give each pair a rock specimen.

Partners will write a description of their rock on an index card. Some guiding questions for this description might be: *How does the rock look? What color is the rock? How does it feel? Is the rock smooth, rough, or something in between? Can the rock be scratched by another material like a nail?*

Collect all the rocks and all the index cards.

Place all the rocks on a table or on the floor together. Redistribute the cards. Partners will read the card they receive. Ask a few pairs at a time to look through the rocks for the rock described on the card.

Discuss whether or not the partners felt they found the correct rock. Talk about what made a good description.

Supporting Science Information

Rocks are made up of different combinations of minerals. Rocks are classified by their mineral and chemical composition, and by the processes that formed them. Scientists determine what kind of processes formed a rock, and what kinds of materials compose the rock by observing the rock and performing tests. Scientists look for basic characteristics like luster, texture, hardness and even taste to give them the first clues about what type of rock they have found.

Crystals Up Close

Materials

black construction paper, magnifying lenses, salt and sugar

What to do

Hand out the black construction paper and magnifying lenses to your students.

Give each student a few crystals on his/her paper. Caution them not to mix them or blow them away.

Students will use a magnifying lens to look carefully at the two types of crystals, noticing their shape. *Are they both the same shape? What else is the same about them? What is different about them?*

Supporting Science Information

Crystals grow naturally in specific shapes. A type of crystal, table salt for example, will always grow the in the same shape. Table salt is a cube shape whether it's very big, or very small and no matter where it grows.

Erosion Table

Materials

disposable aluminum roasting pan, regional soil (or create soil by combining potting soil, sand, and pebbles), ruler, small paper cup, container of water, large container to catch water

What to do

Beforehand, prepare the roasting pan by poking a hole in the bottom of one end. Pack soil in the opposite end of the roasting pan. Poke a hole near the edge in the bottom of the small cup. Lay a ruler across the width of the pan, above the soil. Place the cup on the ruler, so water can flow from the hole you've created. Place the pan on the edge of a desk, so that the end of the pan extends beyond the desk. Place a container below to catch liquid.

Explain to students that this is a model that will demonstrate how water erodes land. Encourage students to think about how a model is different than the real thing. *What can a model show us? How is it the same and different than the real world?*

Slowly pour water into the small cup. Water should begin to flow through the hole in the cup onto the soil below.

When the water has stopped flowing, encourage the students to observe the soil.

Ask the students what they would like to do next: add more water in the same place, move the cup and add water to a different place, etc. Encourage students to explain why they would like to do a particular thing. Ask them to predict how the water will change the soil based on what they have already seen.

Supporting Science Information

Erosion happens when water, wind, or other natural forces wear away rock, sand or soil. Deposition describes when this material settles. The erosion table gives a glimpse at how these processes shape land.

Aerial Drawing

Material

recently used erosion table, plastic wrap, dry erase marker

What to do

Spread plastic wrap across the top of an erosion table after water has run over the soil.

To capture the landforms that you have created, ask a student to look down on the table and attempt to trace the features in the soil onto the plastic wrap. Replace the plastic wrap with a new piece and give other students a try.

Find topographic map of natural land and water features in books or on the Internet. Encourage your students to compare the plastic wrap to these pictures. *What do topographic maps show? How do these help us to study natural landforms?*

Shell Fossils

Materials

non-drying modeling clay, seashells, vegetable oil, Plaster of Paris, water

What to do

To create a fossil, coat a seashell with a thin layer of vegetable oil. Give each student or pair of students a ball of clay and shell of similar size. Have them push the shell into a small ball of modeling clay to create an impression. Remove the shell carefully.

Mix 1 part Plaster of Paris with 2 parts water, and stir. Pour a small amount of Plaster of Paris mixture into the shell impression. Leave to dry overnight.

The next day, allow students to pull the clay from the Plaster of Paris, and observe the clay and plaster.

Supporting Science Information:

Fossils are the impressions or preserved remains of plants and animals that lived millions of years ago. Many times a fossil is a rock with an impression in it, other times fossils are the mineralized remains of a plant or animal. This activity creates two types of fossils. The impression of the shell in the clay represents one type of fossil. The Plaster of Paris mold of the shell represents a fossil that is the preserved remains of a plant or animal.