

Let's Get Digging

Girl Scout Brownie Try-It



There is no better natural laboratory than the ground beneath our feet – you can examine and learn about science just by looking deep into the earth! The study of the earth recorded in rocks is called geology. Rocks that have undergone natural changes caused by wind and water sometimes form distinctive features, both above and below ground. There is so much to discover about the amazing world underground – filled with incredible formations, rocks, and natural processes. Let's get diggin'!

1. Be a Rock Slueth!

Pure substances that make up rocks are called minerals. Two or more minerals put together make a rock. Minerals that we give value to for their beauty, rarity, and toughness are called gems. Geologists look closely at rocks they have collected. They record their observations in order to better understand how rocks are made, and what they are made of.

Activity:

Collect, observe and identify at least 8 rocks, minerals, or gems. Be especially careful not to remove rocks from protected areas or from areas that may become damaged. If you find a rock that you like, but that cannot be removed, you can make a picture of it. First, draw its shape, note its color, and record other characteristics that will help you identify it. Are there examples of rocks, minerals AND gems in your collection? What unique characteristics does each rock have (color, shape, toughness, shine, etc.)? Where did you find your rock and what can that tell you about it?

2. Consider a Category

Rocks exist in all shapes and sizes and they often contain many bits and pieces of minerals. The way that rocks form is one way we can learn about which minerals may be inside. Rocks formed by the process of the heating and cooling of liquid magma (lava that is still underground) are called igneous. Most igneous rocks are made by an active volcano from the present or the past. Metamorphic rocks form from older rocks that combine and change structure after being pulled and squished due to extreme heat and pressure. Metamorphic rocks often have wavy lines of color. Rocks that are formed by layers of broken and dissolved leftovers of older rock and sediments are called sedimentary. A sedimentary rock that contains impressions of forms of life from the past is a fossil.

Activity:

Categorize the rocks in your rock collection as igneous, metamorphic, or sedimentary.

3. Materials in Motion: Erosion

The physical removal of rock and soil by the movement of air, wind and water is called erosion. Particles that are eroded are picked up by the air, wind or water and are transported to another place. Erosion can create interesting natural features and formations for us to enjoy, such as the hollowing of an underground cavern. Erosion can also be harmful to resources we need and rely on, such as soils for farming.

Activity:

Look for and identify signs of erosion in your community. Decide if the examples of erosion you found were made by air, wind, water, or some other factor such as human activity. Think about what is good or bad about the examples of erosion that you found.

4. Elevation Station

Looking at a variety of maps and photos from great distances can teach us a lot about the land we live and play on. A map that shows the physical features of a landscape, such as landforms, river valleys, and oceans is called a topographic map. Satellite pictures, taken from space high above the earth's atmosphere, can also tell us a lot about the physical features of an area.

Activity:

Look at maps, photos, or satellite images of the earth, North America and Wisconsin. Notice the different landforms and physical features you can identify from these sources of information. What are some specific things you notice about each area you observe?

5. What About Weather?

We need the soil from the earth to make food – in fact, soil is what makes the earth a good place for human life. How did the soil underneath our feet first form? The active processes that change the physical and chemical nature of rocks is called weathering. Weathering, in a sense, is responsible for the initial formation of all of the earth's soil. Mechanical weathering occurs when rocks break apart into smaller pieces and slowly crumble. If water gets into cracks and spaces in rocks and then freezes, it expands, and makes the crack in the rock wider. Chemical weathering occurs when water mixes with gases from the earth's atmosphere and eats away rock. When it rains, water mixes with carbon dioxide to form a weak acid that dissolves limestone, sometimes forming underground caverns.

Activity:

Take a walk and identify signs of weathering. How has nature helped cause changes in the things you see? Try to decide if what you notice is mechanical weathering or chemical weathering.

6. Go See a Cave

Visiting a cave is a great way to see rocks and minerals in action! A cave is an opening in the earth made by nature that is large enough for a person to fit into. Caves are formed from many processes that you may have already learned about, like erosion, weathering, and rock & mineral formation. The beautiful formations found inside most caves are called speleothems. Speleothems come in many shapes and sizes and are sometimes given nicknames for what they look like on the surface. Ribbon stalactites are often called "bacon strip" or "cave bacon," while conical stalactites are often called "icicles." Many people can see, or imagine they see, shapes in the cave formations.

Activity:

Be a spelunker and tour a cave in your area to appreciate the thrill and wonder of the natural world – underground! What are the rules of behavior in the cave you visited? How long does it take for one inch of growth on a stalactite? What mineral are speleothems mostly made of? What are the different types of speleothems in caves?