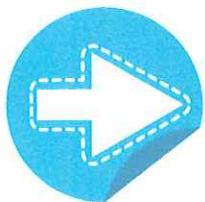
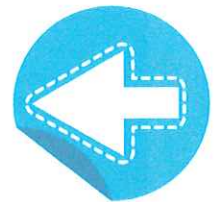


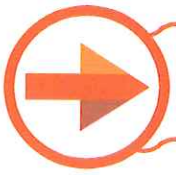


Meeting 9 Geology



Here are three fun ways you can teach Helping Hands about geology. Adapt the activities to meet the needs of your Helping Hands or create your own activities.





The following activities partially fulfill the requirements for the Geology award.

ACTIVITY

1

Make Your Own Fossil

10
MINUTES

MATERIALS NEEDED

- Fossils
- Small seashells
- Modeling clay
- Paper plates
- Plaster of Paris
- Plastic spoons
- Paper cups
- Petroleum jelly
- Markers

WHAT YOU DO

Ahead of time: If you have trouble locating fossils, contact a local rockhound (rock collectors) group, call a university science department, or purchase from an online rock shop.

Show the Helping Hands some fossils. Ask them if they know what fossils are. Explain that fossils are the remains of something that once was alive. Before it could decay, it was covered with sediment—sand, mud, small rocks. It then compressed and turned into rock. As the soft parts of the animal or plant decayed, the hard part left a print in the rock. Then it too decayed. There is no bone, shell, or plant material in a fossil.

Share fun fossil facts:

- Some fossils are of footprints or animal burrows, rather than the animals themselves.
- Fossilized poop is called coprolites. Scientists have found coprolites from *Tyrannosaurus rex* dinosaurs that contain bits of crushed bones.
- It's pretty unusual to find a whole fossilized animal. Scientists usually find shells, bones, and teeth instead.
- Scientists have found fossils of feathered dinosaurs.
- Sometimes animal and plant remains are preserved, but they're not turned to stone. For example, some insects were stuck in sticky tree resin. The tree resin turned to amber, but the insects are completely intact inside.

Give each child a paper plate. Have them write their name on it, then give each child a square of modeling clay about the size of a brownie to place in the middle of their plate. Have them cover the outside of the shell with petroleum jelly, then firmly press the shell into the clay. Slowly and gently lift the shell out of the clay. Make sure it has left a clear imprint in the modeling clay. Mix four spoonfuls of plaster of Paris with two spoonfuls of water. (Spoon size doesn't matter; just keep a four to two ratio.) Pour the plaster into the imprint in the clay. When the plaster of Paris has hardened, carefully remove the clay from the plaster. (It may set up in about 30 minutes, or the children may need to take it home to let it continue hardening.)

Fun fossil facts from easyscienceforkids.com/all-about-fossils.





Candy Rock Cycle

WHAT YOU DO

20
MINUTES

Ahead of time: Before preparing for this activity, you may want to go to YouTube and watch “Starburst Rock Cycle Activity” by Chad Ackerson. This short video demonstrates each of the steps for this activity. Cut up the candy into small pieces. Make small bowls that are flat on the bottom out of the aluminum foil.

Begin by reading and discussing the meaning of Psalm 18:2 (CEB): “The Lord is my solid rock, my fortress, my rescuer. My God is my rock—I take refuge in him!—he’s my shield, my salvation’s strength, my place of safety.” Use this verse to lead into a discussion of the different types of rocks. Show the children the sedimentary, metamorphic, and igneous rock samples. State that each of the rocks is part of the rock cycle—the process that rocks go through to change into other types of rocks.

Give each child at least four different colors of soft candy that has been cut into pieces. Tell them that the candy represents sediment (small pieces of rocks, minerals, plants, fossils, and other debris). Explain that sediment is mixed and squeezed together to form a compact rock called sedimentary rock. Then have the children mix the candy together using their fingers. This represents wind, rain, and rivers mixing the sediment. Now have the children squeeze the candy together to form a solid shape. This represents compaction (being buried under sand, soil, or other rocks). Ask them how this compares to the sedimentary rock you showed them.

Next, talk about how rocks can get buried deep in the earth where heat and pressure turn them into another rock type: metamorphic. Have the children place their candy in a plastic bag. Keeping their hands outside of the bag, have them squeeze and roll the candy. Tell them that the warmth from their hands represents heat in the earth. Then have the children press firmly on the candy using a book or other heavy object to illustrate the earth’s pressure. Take the candy out of the bag, fold it in half, return it to the bag, and press again with the book. Compare the candy rocks to the metamorphic rock you brought.

Tell the children that rocks can melt to form magma, which is hot liquid rock found below the surface of the earth. When magma cools, it becomes igneous rock. Show the children the igneous rock, then have them place their candy rock into a foil bowl. Assign an adult to each of the hot plates you are using. The adults should place the foil bowls on the hot plates and melt the candy rocks until they start to bubble, representing magma. Have the adults place the melted magma candy in a freezer or ice chest to speed up the cooling process.

While the candy rocks cool, review the stages of the rock cycle. Ask the Helping Hands how each type of rock can be made into each of the other rocks discussed. Remember to give the children their cooled igneous rocks from the freezer.

2

ACTIVITY

MATERIALS NEEDED

- Soft, chewy candy (like Starbursts or taffy) cut into small pieces, four colors per child
- Plastic baggies
- Books or other heavy objects
- Aluminum foil
- Hot plate(s)
- Tongs
- Samples of sedimentary, metamorphic, and igneous rocks



ACTIVITY

3

Rock Collection Kits

15
MINUTES

MATERIALS NEEDED

- Shoeboxes or other boxes
- Egg cartons (with the tops cut off)
- Small, round, blank stickers
- Pennies
- Steel files
- Unglazed kitchen or bathroom tiles
- Small notebooks
- Pens
- A variety of rocks
- Rock field guides
- Dry erase board or large sheet of paper
- Marker

WHAT YOU DO

Ahead of time: Collect or purchase a variety of rocks so each child can have several, or have children bring in rocks that they have collected.

Show the children a completed rock collection kit (box and notebook). To begin making their own kit, give each child a box. Have them place the bottom half of an egg carton in the box. The egg carton is for smaller rocks. Larger rocks can be set in the bottom of the box. Now give each child a notebook and pen. Explain that once they select their rocks, they are going to make an observation sheet for each rock. On each rock, they will place a numbered sticker. Then they will make the following observations about each rock (write this on the board so the children can remember what observations to make):


- Rock # _____
- Describe the rock (size, texture, shape). If possible, state if the rock is sedimentary, metamorphic, or igneous.
- Tell where the rock came from.
- Do a hardness test and report the results.
- Do a scratch test and report the results.
- Extra comments. (The children can include any additional observations or facts that they have about the rocks. They might use a rock field guide for more information.)

How To Do a Hardness Test

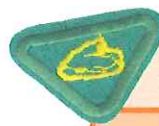
Rocks are rated from 1 to 10. 1 is the softest and 10 is the hardest. Talc has a hardness of 1 and a diamond has a hardness of 10. Use your fingernail, a penny, and a steel file to test the hardness of a rock. If your fingernail scratches the rock, it has a hardness of less than 2. If the penny scratches it, the rock has a hardness of less than 4. If the steel file scratches it, the hardness is less than 6.

How To Do a Scratch Test

Firmly rub the stone across a piece of unglazed tile to see the rock's color(s). Some really hard rocks will not leave a color.



Let the children select their rocks, number them, and write their observations. Hand out rock field guides for them to use as they observe.



Award: Geologist

To complete this award, check the requirements on p. 135 and add activities as needed.