Modified In-School Off-School Approach Modules (MISOSA) Distance Education for Elementary Schools SELF-INSTRUCTIONAL MATERIALS



BREAKING OF ROCKS



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Department of Education BUREAU OF ELEMENTARY EDUCATION 2nd Floor Bonifacio Building DepEd Complex, Meralco Avenue Pasig City

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BREAKING OF ROCKS



Match Column A with Column B. Write the answers in your notebook.

- 1. The kind of rock that is formed from molten rock. A. sedimentary rock
- 2. The kind of rock that is changed from other rocks. B. sandstone
- 3. Shale is an example of this kind of rock. C. igneous rock
- 4. A metamorphic rock formed from limestone. D. metamorphic
- 5. A sedimentary rock formed from pressed sand. E. marble

Were your answers correct? Read these:

- Sedimentary rock are formed out of sediments
- Sandstones are made of mud and sand. They are used in walls and buildings
- Igneous rocks are formed from magma
- Metamorphic rocks are composed of these that were once igneous ot sedimentary rocks.
- A marble is made from limestone. Its colors depend on its environment. It is used in making beautiful walls, floorings and movements.





Have you ever wondered where the oil comes from? If you do, you will find out in this lesson how rocks could become soil.

Activity 1-Water, Rocks and Soil

In this activity, you will see how water affects breakdown of rocks to soil.

What you need:

small and soft rocks samples glass jar half-filled with water piece of clean cloth rubber band

What to do:

1. Put the small and soft rock samples that you have prepared inside the glass jar half-filled with water then cover it tightly.



2. Shake the glass jar for about 2 minutes.





3. Remove the cover of the glass jar. Replace it with the piece of cloth tied at the brim of the bottle with the use of the rubber band as shown in the illustration.



4. Turn the glass jar upside down to empty the water in the bottle as shown in the illustration below.



5. When the water is gone, remove the piece of cloth in the glass jar and examine the rock samples that you placed inside. record your observation in your notebook.

Answer these:

- 1. What happened to the rock samples that you have placed inside the glass jar?
- 2. Where did the small particle lest in the glass jar come from?
- 3. What caused the rock to break in small pieces?
- 4. Are these small particles look the same with the soil?

Did you get the correct answers? Find out.

The soft rock samples you put inside the jar half-filled with water became small particles after shaking the jar for about two minutes. It's the water that caused the rocks to break into small pieces. The small particles look like tiny bits and finally look the same the soil.

Would you like to learn more ideas about the breaking down of rocks? try the next Activity.



Activity 2- Man, Animals, Plants and Rocks

In this Activity, you will observe how many, animals and plants break down rocks to soil.

What to do:

- 1. Go round your garden. Look for plants that grew in rocks. Observe them. You may even draw them in your notebook.
- 2. Observe how the roots of the plants anchor themselves in the rocks.
- 3. Observe a place which is often walked-through by people and animals.
- 4. Record your observations.
- 5.

Answer these:

- 1. What happened to the rocks where the plants grow?
- 2. Do roots have something to do with in the breakdown of rocks? How?
- 3. Describe the rocks that you saw in the place where people and animals often walk-through. How do they look, like? Why?

Were you able to get the correct answer? Read the paragraph below.

Man, animals and plants contribute to the breaking down of rocks. Some of the activities of men that help in breaking rocks are digging mountains and rocky places of mining and quarrying activities. Animals break down rocks with their claws and hooves as they move around.

Some plants grow on rocks. When they die and decay, they give off acid which slowly breaks them down. Roots of plants may find their way into cracks. As the roots grow bigger, the cracks become wider; this can cause the rocks to break apart.



Activity 3 – Heating and Cooling of Rocks

In this activity, you will see how heating and cooling affect rocks. Using matches could be dangerous. It can cause fire.

What you need:

soft rocks such as limestone, sandstone or shale basin cold water tongs candle safety match

What to do:

- 1. Observe one rock with your naked eye.
- 2. Hold the rock with the tongs.
- 3. Put the rock over the flame of the lighted candle for about I minute.
- 4. Observe what happens to the rock.
- 5. Heat the rock again for about 1 minute, then drop it into the cold water.
- 6. Take the crook out of the water, wipe it dry, and examine it.
- 7. Record your observation in your notebook.

Answer these;

- 1. Describe what happened to each rock when you applied heat.
- 2. Describe what happened to the hot rock when placed in water.
- 3. Did the rock change? Why?
- 4. What is the effect of heating and cooling rocks?

Did you get the correct answers? Read the paragraph below.

At daytime, the rocks expand because the sun heats the surface. At night, it is cold, so the rocks contract, crack or break. The continuous heating and cooling of rocks break them up.

Some rocks have holes and cracks in them. Water enters through the holes and cracks when it rains. When the rocks become cold, the water in these holes and cracks freezes and the rocks cracks. When this process continues for many years, the rocks break into pieces.



READ AND LEARN MORE

- Rocks are hard, compact and solid. They continuously break into small pieces. This process is called weathering. There are factors that cause the breaking down of rocks to small pieces and finally become soil.
- Different factors act constantly of rocks to break and change them to soil. These factors include heat, air, water, plants, animals and man.
- In weathering, the rock may just crumble down into smaller process or it may produce some other new substances.
- Plants may break down rocks. Some plants grow on rocks. When they die and decay, they give off acid which slowly breaks them down. Roots of plants may find their way into cracks become wider, this can cause the rock to break apart.
- Man and animals help in breaking rocks are digging mountains and rocky places for mining and quarrying activities. Animals breakdown rocks with their claws and hooves as they move around and their waste materials help in the decay of rocks.
- Weather elements also help in breaking down rocks. The alternate heating and cooling of rocks for a long time cause them to break apart. When the wind blows, it picks up sand and hurts them against the rocks, as they hit the rocks, the rocks wear away. Fast moving water carrying soil and bigger ocean waves crash onto the shore and pound against big rocks causing the, to break down into smaller pieces. These are only some f the forces that help in breaking down of rocks.







In 3 to 5 sentences, answer the following questions. Write the answers in your notebook.

- 1. Your father bought a hundred pieces of concrete hollow blocks for your house to be constructed soon. Where will you store them to preserve their strength ? Why?
- 2. A manager of a quarrying firm visited your barangay and expresses his intention to conduct quarrying business in your place. He promises to give conations to the people of your barangay once he is permitted to operate this business. As a member of the community, will you go for it? Why?





Choose the letter of the correct answer. Write the answer in your notebook.

- 1. which of the following activities of man contribute to the breaking down of rocks?
 - a. fishing
- c, studying
- b. mining d. sky diving
- 2. How do roots of plant break down rocks?
 - a. They split the rocks apart.
 - b. They heat the rocks.
 - c. They leave materials on the rocks.
 - d. They absorbed rock particles
- 3. How does temperature breakdown rocks?
 - a. Rocks break when it is cooled.
 - b. Rocks break when it is heated.
 - c. Rocks break when it is not exposed to water.
 - d. Rocks break when it is heated and then cooled.
- 4. Some animals like the rabbits and moles dig up soil for shelter or to find food. How doesn't its activity contribute to the breaking down of rocks?
 - a. The food that these animals bring underground causes the breaking of rocks.
 - b. The digging of borrowing of animals breaks the rocks into small pieces.
 - c. Small rocks that be exposed to sunlight.
 - d. Animals will enjoy staying in the dug holes and cause the rising of temperature inside.
- 5. Water, people, animals wear away bits of rocks. when this happens, which of these is going on?
 - a. erosion

- c. mountain building
- b. weathering
- d. fermenting

How is weathering important to the life of the people?

