

Making a Model of the Rock Cycle

Students are presented with the problem of creating a model of the rock cycle using the materials given. To solve this problem, students will have to apply the concepts they have learned about the major groups of rocks and how those rocks fit into the rock cycle.

◆ Expected Outcome

Students should be able to classify the three unlabeled rock samples as igneous, sedimentary, and metamorphic. Once classification is accomplished, they can tape the rocks to the cardboard and use the marker to label the rocks and write the names of processes between them. The final product should be a model of the rock cycle that looks much like *Exploring the Rock Cycle*, on page 168 in their text.

◆ Content Assessed

This activity assesses students' knowledge of characteristics of each major group of rocks, how each of those rocks form, and how those groups fit into the rock cycle.

◆ Skills Assessed

observing, classifying, making models

◆ Materials

◆ Provide each student with three unlabeled rock samples, one from each major group of rocks. Classification of these rock samples should be obvious to someone who has learned the material in the chapter. Therefore, the best choices might be granite (igneous), sandstone (sedimentary), and gneiss (metamorphic). The metamorphic rock should be foliated, so that students can easily observe that characteristic.

- ◆ Provide each student with a piece of cardboard. This could be the side of a box that has been cut apart. The cardboard should be strong enough to hold the taped rock samples in place.
- ◆ Two or three rolls of masking or duct tape should be sufficient for the whole class.
- ◆ Students will need markers to label their rock cycle models.

◆ Advance Preparation

- ◆ Obtain enough rock samples for each student. These samples can be quite small, as long as they are large enough for students to be able to observe such characteristics as grain size and foliation.
- ◆ Cut cardboard boxes into pieces about 30 cm × 30 cm with a utility knife or heavy scissors.
- ◆ Buy masking or duct tape and markers.

◆ Time

20 minutes

◆ Monitoring the Task

- ◆ Advise students that they can tape the rock samples to the cardboard by making a loop of tape that they can stick to the cardboard and the back of the rock.
- ◆ Allow students to pass rolls of tape around the classroom during the activity.
- ◆ Advise students that the more labels they write, the clearer their model will be.



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In assessing students' performance, use the following rubric.

	4	3	2	1
Making a Model of the Rock Cycle	The student correctly classifies igneous, sedimentary, and metamorphic rock samples and makes a neat and accurately labeled model of the rock cycle.	The student correctly classifies igneous, sedimentary, and metamorphic rock samples and makes a neat and mostly accurate model of the rock cycle.	The student correctly classifies one of the rock samples and makes a model of the rock cycle that has several minor errors.	The student incorrectly identifies the rock samples and makes a model of the rock cycle that is mostly inaccurate.
Concept Understanding	The student demonstrates a mastery of the concepts related to the major groups of rocks, how they form, and how they fit into the rock cycle.	The student demonstrates an adequate understanding of the concepts related to the major groups of rocks, how they form, and how they fit into the rock cycle.	The student demonstrates some confusion about the concepts related to the major groups of rocks, how they form, and how they fit into the rock cycle.	The student demonstrates a weak understanding of the concepts related to the major groups of rocks, how they form, and how they fit into the rock cycle.



PERFORMANCE ASSESSMENT

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◆ Problem

How can you make a model of the rock cycle?

◆ Suggested Materials

igneous rock sample
sedimentary rock sample
metamorphic rock sample
hand lens
tape
cardboard
marker

◆ Devise a Plan

1. Study the materials and think of a way they could be used to make a model of the rock cycle.
2. Classify the rock samples as igneous, sedimentary, or metamorphic.
3. Use the classified rocks in your model.

◆ Analyze and Conclude

On a separate sheet of paper, respond to the items that follow.

1. Explain why you classified one rock sample as igneous, and describe how that rock might have formed.
2. Explain why you classified one rock sample as sedimentary, and describe how that rock might have formed.
3. Explain why you classified one rock sample as metamorphic, and describe how that rock might have formed.
4. What forces drive the rock cycle?
5. Where does the rock cycle begin and end? Give reasons for your answer.

