

The Rock Cycle

How do rocks form? Are new rocks forming at this moment? Why do they break up into small pieces? Why are there layers and streaks? After this lab and the culmination of Unit 4 you should know the answers to all of these questions.

Materials:

wax paper
newspaper
hot plate

small pencil sharpener
Al foil
snow or ice cubes

crayons
tuna can



PART 1 WEATHERING

1. Cover your lab table with newspaper like a table cloth.

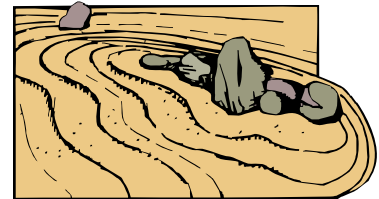
2. Obtain two squares of wax paper, a small pencil sharpener, and four crayons the same color as your lab partner. The crayons are your parent rock material and the pencil sharpener is your disintegration weathering agent. Shave each crayon color into a small pile with your partner's on the waxed paper. Keep each color separate.

- Are all your "rock fragments" the same size? Why or why not?
- What are some of nature's weathering forces?



PART 2 EROSION and SEDIMENTATION

3. Obtain a piece of Al foil 45 cm x 45 cm. Fold it in half (22.5 cm x 45 cm). You are now the erosion force. Carefully "erode" (move) one color of your "rock fragments" and put them in the center of the foil making an 8 cm x 8 cm layer of "sediment." Now the other partner should add a second color of "rock fragments" to the "sediment." Continue adding the other "rock fragments" to the "sediment."



4. When finished fold each side of the foil over the "rock fragments." Allow for a 1 cm distance between the shavings and each fold as room for expansion.

PART 3 COMPACTION, CEMENTATION and LITHIFICATION

5. Place your "rock fragment" sandwich on the floor. Mildly compress your package by carefully applying pressure with your foot. Carefully open your package.

6. Break the compressed central region, look at the broken edges and describe the layers.

- How do they compare to the original layers?
- What happened to the spaces between the fragments?



PART 4 METAMORPHISM

7. Replace the fragments and rewrap your package. Your rocks are now going to be buried deep within the earth or be subjected to mountain building when you add as much pressure as you can by standing with one foot on your package and applying all of your body weight to it. You may even carefully stomp on it.

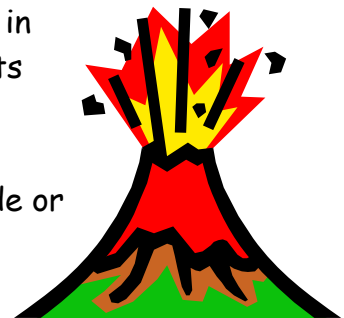
8. Remove your newly formed "metamorphic rock." Open the foil and break your rocks open. Examine them carefully, noting what happened to the thickness, fragment shape and the texture of the surface against the foil.



PART 5 IGNEOUS ROCK FORMATION and VOLCANIC ACTIVITY

9. Obtain a clean tuna can and place your "metamorphic rocks" in the can. Carefully heat to melting over a hot plate. If it starts to smoke, you are heating it too strongly.

10. While it is heating obtain a beaker full of snow from outside or make a bowl-shape with another piece of Al foil with 5-6 ice cubes in it.



11. When your "magma" has formed "erupt your volcano so lava flows" (carefully pour it) over the snow or ice cubes. After it has cooled remove your "extrusive igneous rocks."

- Do you see any crystals?
- What kind of texture and shape do you see?

12. Clean up your lab area and return equipment to the supply table.



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