Name _____ Date _____ Class _____

Classifying Rocks

Guide for Reading

- What characteristics do geologists use to identify rocks?
- What are the three main groups of rocks?

ANSWER Q's ON BACK OF PAPER

The rock of Earth's crust forms mountains, hills, valleys, beaches, and the ocean floor. **When studying a rock sample, geologists observe the rock's mineral composition, color, and texture.**

Rocks are made of mixtures of minerals and other materials, although some rocks may contain only a single mineral. The 20 minerals that make up most of the rocks of Earth's crust are known as **rock-forming minerals.** A rock's color provides clues to the rock's mineral composition. **Granite** is generally a light-colored rock that has high silica content. **Basalt** is a dark-colored rock that is low in silica. Geologists also observe the shape and color of crystals in a rock to identify its minerals. They may perform other tests, such as testing the surface of a rock with acid, to determine the presence of certain compounds.

Color alone does not provide enough information to identify a rock. A rock's **texture,** the look and feel of the rock's surface, is very useful in identifying a rock. Most rocks are made up of **grains,** particles of minerals or other rocks. Grains give the rock its texture. Geologists use a number of terms to describe a rock's texture based on the size, shape, and pattern of the rock's grains. Often, the grains in a rock are large and easy to see. These are said to be coarse-grained. In other rocks, the grains are so small that they can be seen only with a microscope. These are said to be fine-grained. Some rocks have no visible grain even when they are examined under a microscope. Rock grains vary widely in shape. Some look like tiny particles of sand, while others look like small seeds or exploding stars. In some rocks, the grain shapes result from the shapes of the crystals that form the rock. In other rocks, the grain shapes result from fragments of other rock.

The grains in a rock often form patterns. Some grains lie in flat layers. Other grains form swirling patterns. Some rocks have grains of different colors in bands, while in others the grains occur randomly throughout.

Geologists classify rocks into three major groups: igneous rock, sedimentary rock, and metamorphic rock. These terms refer to how the rocks in each group formed. **Igneous rock** forms from the cooling of molten rock. **Sedimentary rock** forms when particles of other rocks or the remains of plants and animals are cemented together. **Metamorphic rock** forms when an existing rock is changed by heat, pressure, or chemical reactions.