

## Crystals, Minerals, Rocks!

### Background

Minerals are the building blocks of rocks. Rocks are made up of more than one mineral. But what are minerals made of? Minerals are made of crystal shaped compounds of the earths naturally occurring elements. All of the crystals in a specific mineral are the same shape.

### Materials

Preprinted crystal shapes (available at <http://bca.cryst.bbk.ac.uk/BCA/ed/Class.pdf> copied onto colored paper if desired, one color per shape)

Scissors

Glue

Masking tape

Glitter (optional)

### Procedure

Divide the class into several groups with 5-8 members in each group. Pass out a preprinted crystal shape to each member of the group. Members of the same group should have the same crystal shape. Each group should have a different crystal shape.

Have students cut along the solid line and fold along the dotted lines. Glue should be placed sparingly on the tabs. Use the tabs to secure the sides of the crystal together. Now each group member should have a completed crystal.

Crystals are the building blocks of minerals. Have the group members note that their crystals are all the same shape. Have them try to place their crystals together so that the sides match up. Have them try several different arrangements until they find an arrangement that fits all of their crystals in the smallest amount of space. (Hint: sides with the same shape will fit together the most closely).

When the students have figured this arrangement out, secure the crystals together with a small piece of masking tape (so they will come apart later). When all the crystals are attached you have a mineral!

When all the crystals are taped together, have the class note the difference in shape between different group's minerals.

Challenge the students to try and fit the different mineral shapes together. This forms a rock. A rock is made up of two or more minerals. The minerals may not seem like they want to fit together. You can explain to the students that heat and pressure under the earth forces the minerals to join and form a rock.

To demonstrate heat and pressure have students place their hands flat, together in front of them. Have the students rub their hands back and forth quickly. This is generating heat. Have the students put as much pressure on their hand as they can and still rub their hand together, this should increase the heat. Now have students lessen the pressure so there is a small layer of air between their hands while still rubbing their hand back and forth, this should cool their hands off. It is in the hot, pressured environment that rocks are formed. Join the minerals together with masking tape as best as they will fit. Now the class has made a rock!

The rock can be disassembled and crystals given back to the students. At this point you can decorate your crystals with glitter or any other materials you choose.