

Write one important fact from each paragraph in this space.

Science Shorts -6

Minerals

Minerals have changed the course of history. People have fought wars over minerals, explored unknown places in search of them, and have changed the surface of the earth in order to mine them. Just what is a mineral?

You can define a mineral in terms of its special characteristics. A mineral is usually a solid. It occurs naturally in the earth's crust, and is formed from nonliving things.

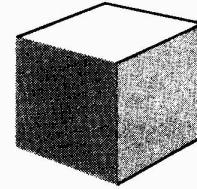
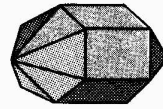
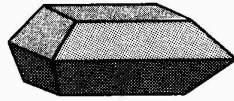
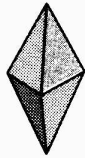
Each mineral has a certain chemical composition. A mineral can be a single element or a chemical compound. In each mineral, the atoms are arranged in a certain way. In some minerals, the atom pattern is repeated over and over again, forming a structure called a **crystal**. Because all the crystals of a particular mineral have the same shape, the crystal shape is often used to identify a mineral.

Mineralogists, scientists who study minerals, have learned that some minerals form from hot, liquid **magma**, or melted rock, that is deep inside the earth. If the hot magma cools slowly, it forms large crystals. If the magma cools quickly, it forms small crystals. Other minerals form as a result of evaporation. Minerals that dissolve in water **crystallize**, or form crystals, as the water evaporates. If the evaporation process is slow, large crystals will form. If the evaporation occurs rapidly, small crystals form.

About 90 of the known elements are present in the minerals of the earth's crust. However, just 8 of these elements make up most of the crust. Oxygen is the most common element. It makes up almost 50% of the crust. Silicon is the second most common element. It is about 28% of the crust. The other common elements are aluminum, iron, calcium, sodium, potassium, and magnesium. All the others together are less than 2% of the crust.

The crystals of four minerals are described below. Using this information, write the name of each mineral under the drawing of its crystal on the next page.

1. The crystals of **halite** are cubes.
2. The crystals of a **diamond** are eight-faced and look like two four-sided pyramids fitted base to base.
3. The crystals of **hornblende** do not have any right angles.
4. **Quartz** crystals are formed from six-sided (hexagonal) prisms.



1. _____ 2. _____ 3. _____ 4. _____

WORD ACTIVITY

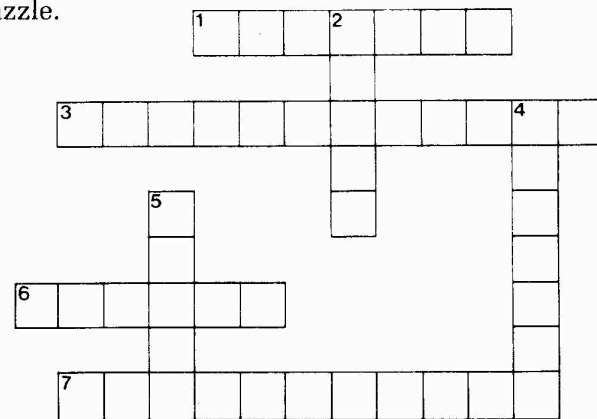
Use the clues to complete the crossword puzzle.

Across

1. Solid with a repeated pattern of atoms
3. Scientist who studies minerals
6. Most common element in earth's crust
7. Minerals crystallize by this process

Down

2. Minerals are usually in this form
4. Second most common element in crust
5. Melted rock deep inside the earth



QUESTIONS

Fill in the blanks with the word or words that will make the sentence true. Use the words below.

oxygen magma mineralogists crystal
large crust silicon small

1. Minerals are formed by nature in the earth's _____.
2. A _____ is a repeated pattern of atoms in a mineral.
3. Scientists who study minerals are called _____.
4. Minerals may be formed from hot, liquid _____. When this material takes a long time to cool, _____ crystals form; when cooling occurs rapidly, _____ crystals form.
5. Two elements that make up over 75% of the earth's crust are _____ and _____.