NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**LAB: 3-D PAPER MINERAL CRYSTALS**

All minerals in Earth’s crust have a *crystalline* structure. Each type of mineral crystal is characterized by a specific geometric arrangement of atoms.

A **crystal** is a solid whose atoms are arranged in a regular, repeating pattern.

A large mineral crystal displays the characteristic geometry of that crystal’s internal structure. The conditions under which minerals form, however, often hinder the growth of single, large crystals. As a result, minerals are commonly made up of masses of crystals that are so small you can see them only with a microscope. But, if a crystal forms where the surrounding material is not restrictive, the mineral will develop as a single, large crystal that has one of six basic crystal shapes. Knowing the crystal shapes is helpful in identifying minerals.

One way that scientists study the structure of crystals is by using X rays. X rays that pass through a crystal and strike a photographic plate produce an image that shows the geometric arrangement of the atoms that make up the crystal.

After building your paper crystal models, complete the following summary table:

|  |  |  |  |
| --- | --- | --- | --- |
| SUMMARY | | | |
| 1. How are the different mineral crystal shapes similar? | | 1. How are the different mineral crystal shapes different? | |
| 1. Why are most mineral crystals too small to see with the naked eye? | | | |
| 1. How can scientists determine the geometric arrangement of the atoms that make up the crystal? | | | |
| 5) The physical properties of a mineral are largely due to its  A) melting point  B) organic composition  C) volume  D) internal arrangement of atoms | 6) Differences in crystal shapes between minerals are most likely caused by the  A) number of cleavage planes  B) internal arrangement of atoms  C) external arrangement of flat surfaces  D) number of pointed edges | | 7) The hardness and density of a gemstone is based primarily on the gemstone's  A) internal arrangement of atoms  B) geologic time of formation  C) oxygen content  D) natural abundance |