

*Physical Science Laboratory: Minerals*

**Instructions.** Obtain a box of minerals from the instructor, and spread the samples out in order on your desk. Note that the mineral samples are numbered. This is for convenience in sorting only. The numbers are not related to the Mohs scale, or to the minerals' hardness.

**MOHS SCALE**

*Of hardness*

- . Talc
- . Gypsum
- . Calcite
- . Fluorite
- . Apatite
- . Orthoclase (feldspar)
- . Quartz
- . Topaz
- . Corundum
- . Diamond

1. **Hardness.** Find numbers 1, 2, 3, 4, 5, 11, 16, 18. These eight samples contain six out of the first seven (talc through quartz) of the minerals on the Mohs hardness scale (apatite is missing). Of the numbered samples you have set aside, there are two which are the same mineral as each other, and another two which are also the same as each other but not the same as the first two).

A. Find 2 samples which are the same mineral (one sample is very pure the other is not). They are \_\_\_\_\_ & \_\_\_\_\_. Find the other two samples which are the same mineral; these are \_\_\_\_\_ & \_\_\_\_\_.

B Arrange samples 1,3, 4,18 in order of their hardness, using each one to scratch and be scratched by the others.

*Note: Scratch and streak are sometimes confused with one another. A scratch is a permanent mark on the mineral scratched. If no mark remains are rubbing the mark with your finger, it was a streak.*

Softest sample \_\_\_\_\_ Next harder \_\_\_\_\_ Next harder \_\_\_\_\_ Hardest \_\_\_\_\_

C. Of the rest, find one so soft it is almost greasy. This is the softest mineral on Mohs scale \_\_\_\_\_

D. Based upon; the way you arranged the mineral samples according to hardness; the hardness scale at the right; and knowing that apatite is missing; fill in their names below.

1 _____	2 <u>rose quartz</u>	3 _____
4 _____	5 <u>orthoclase (feldspar)</u>	11 <u>fluorite</u>
16 _____	18 _____	

**II. Features and attributes of the other samples.**

A. Looking through the rest of the minerals, which two do you think are fool's gold? \_\_\_\_\_ & \_\_\_\_\_

B. Which might sometimes be used in jewelry? \_\_\_\_\_

C. Numbers 6,7,8,9,10 contain the minerals magnetite, hematite and limonite. These are oxides of the element iron.

[a] **Hematite** has a reddish-brown streak. On the basis of streak identify the three hematite samples by number: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

[b] **Magnetite** is a natural magnet. What is the number of magnetite? \_\_\_\_\_

- [c] **Limonite** has a yellow-brown streak. Which one is limonite? \_\_\_\_\_
- D. **Mica** has distinctive cleavage in sheet form. **Biotite mica** is dark \_\_\_\_\_;  
**muscovite mica** is clear \_\_\_\_\_.
- E. Of the rest of the samples, find:
- [a] **galena**: cubic cleavage, silvery luster, lead ore \_\_\_\_\_
- [b] **massive gypsum**: easily scratched with a fingernail \_\_\_\_\_
- [c] **hornblende**: black to green-black \_\_\_\_\_
- [d] **halite**: colorless, cubic cleavage \_\_\_\_\_
- [e] **olivine**: pale green to olive green \_\_\_\_\_
- [f] **sulfur**: bright yellow \_\_\_\_\_