

NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

LAB PARTNERS: \_\_\_\_\_ LAB #8

## THE PHYSICAL PROPERTIES OF MINERALS

### INTRODUCTION

There are over 2000 known minerals that have been found on the earth as well as extra-terrestrially. Some of these known minerals have only one or two samples that have ever been found such as on meteorites that have struck the earth. About 15 of the known minerals are called the "common rock forming minerals" because they can be found in many rocks over most of the earth's surface. All minerals possess fixed chemical and physical properties which differentiate them from the other minerals. Due to some of these properties minerals are used in many things that we use in our everyday life. In this laboratory exercise you will be looking at a number of these physical properties.

### OBJECTIVES

By the conclusion of this laboratory exercise you will have:

1. Determined at least 9 different physical properties of mineral samples.
2. Correctly identified the name of the mineral samples used in the lab.
3. Answered summary questions about the general differences between minerals and their properties.

APPROXIMATE TIME    2 Periods

### MATERIALS

12-15 different mineral samples

- 1 Glass plate
- 1 Magnet
- 1 Streak plate
- 1 Copper penny
- 1 Steel nail

### PROCEDURE

1. Your instructor will provide each lab group with a set of mineral samples.
2. Using the lab materials, determine the physical characteristics listed in the data chart on page 3 for each of the minerals.
3. Page 2 contains some of the characteristics you will need in identifying your mineral samples.
4. After you have filled in all of the physical characteristics, use the **Properties of Common Minerals Chart** in your textbook and ERST to match up your characteristics with those in the charts. Choose the mineral that matches exactly or as close as possible.
5. Answer the lab questions.

**Hardness** - The measure of a mineral's resistance to being scratched.

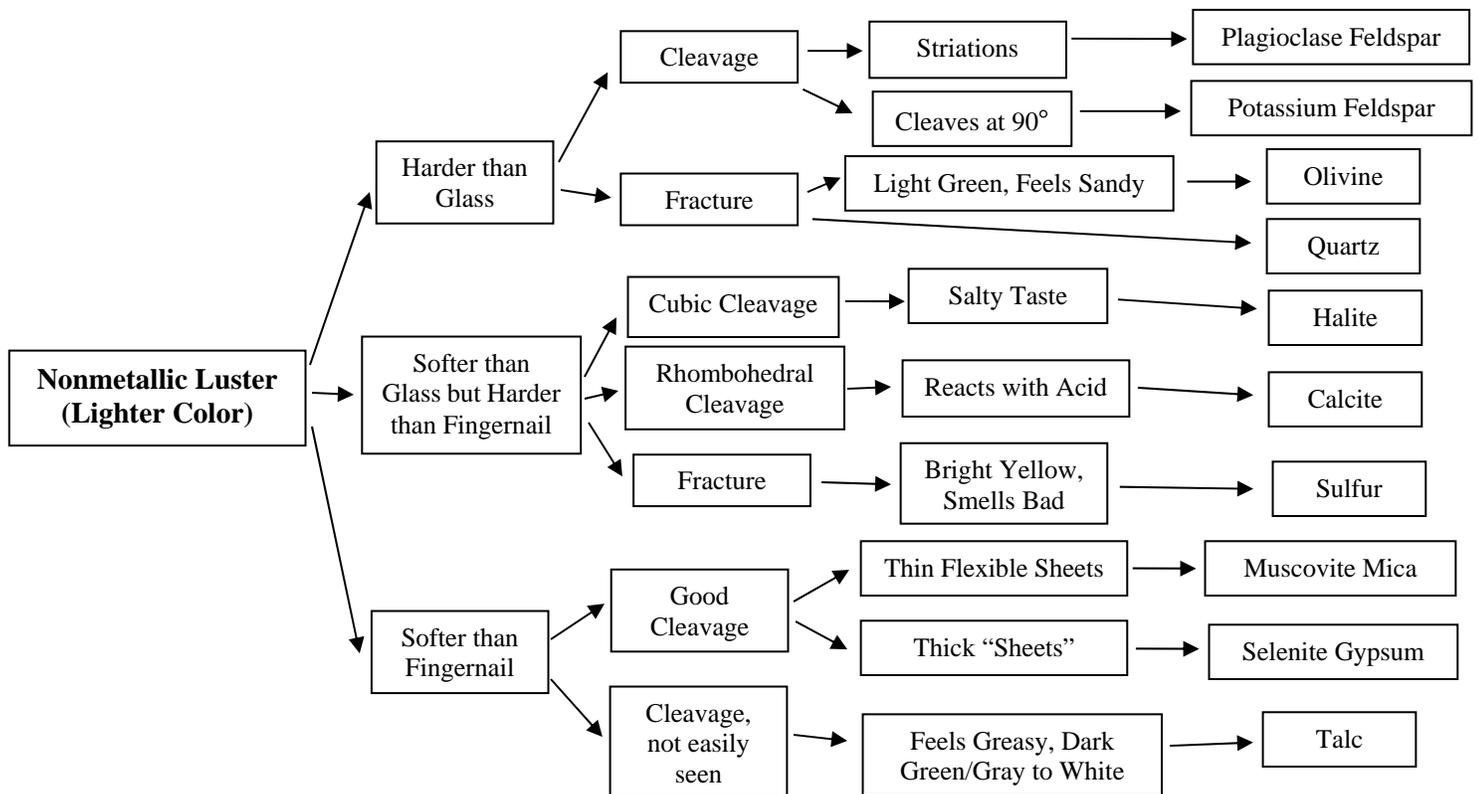
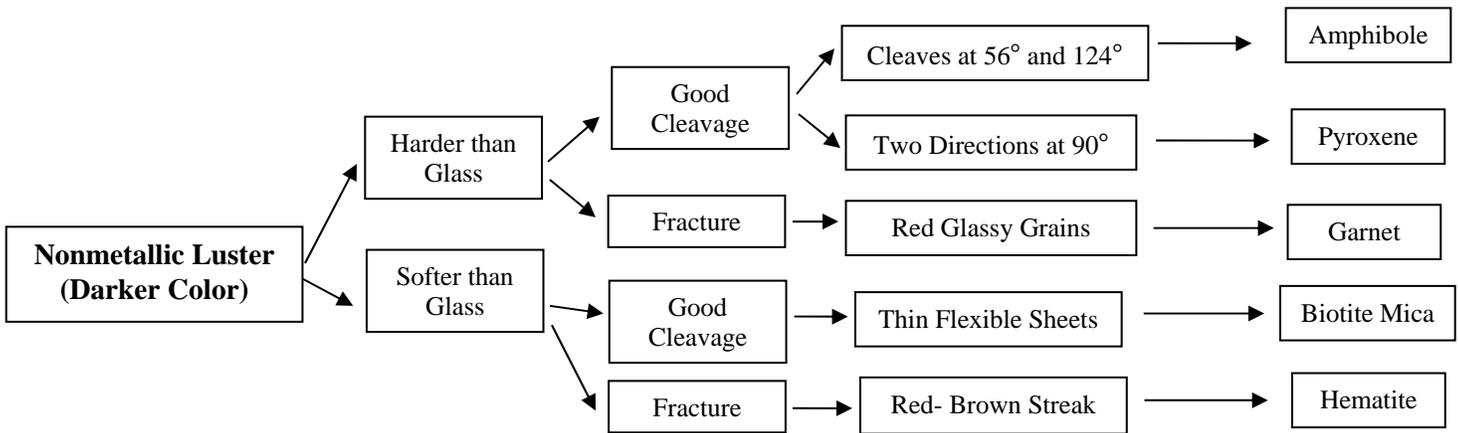
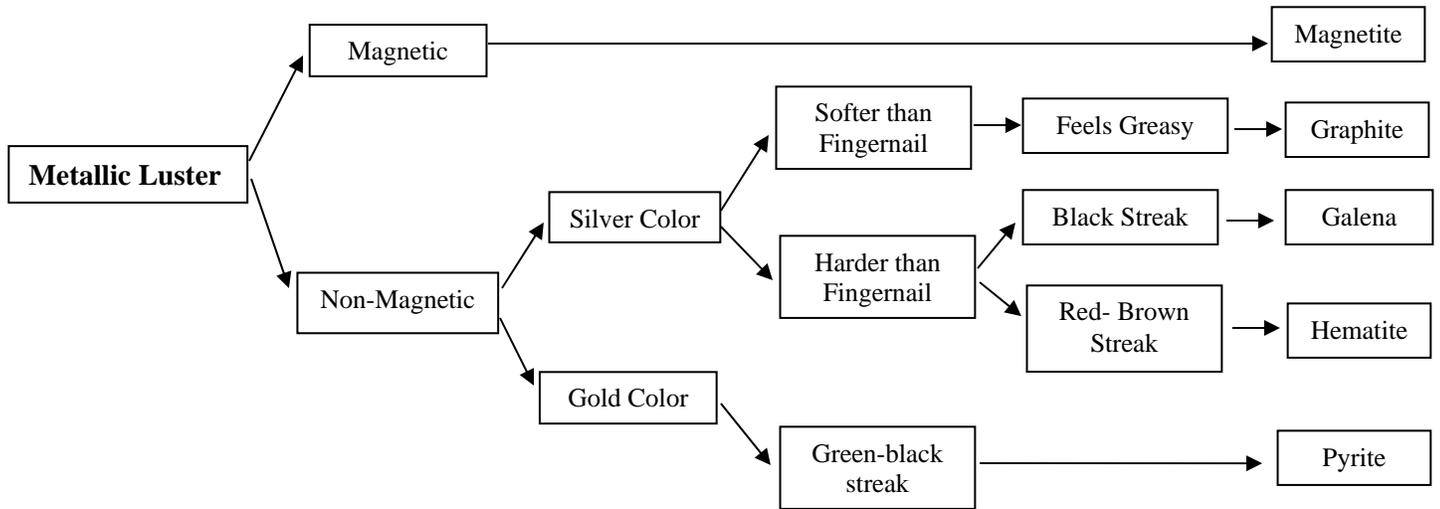
Use the following items as a comparison to determine the hardness of each of your mineral samples.

Fingernail – 2.5

Penny - 3

Glass - 5.5

## MINERAL FLOW CHART



<b>SAMPLE #</b>	<b>LUSTER</b> Metallic/ Non-metallic	<b>HARDNESS</b>	<b>CLEAVAGE/ FRACTURE</b>	<b>STREAK</b>	<b>COLOR</b>	<b>SPECIAL PROPERTIES</b> i.e. magnetic/density	<b>MINERAL NAME</b>
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

## **LABORATORY QUESTIONS**

1. Why is color alone not a reliable property in identifying a mineral?

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2. Does the color of the mineral always match the streak? \_\_\_\_\_. If no give a mineral that does this:

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3. Some minerals show distinct planes of cleavage. What do you think causes a mineral to split along these planes?

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4. Why do different minerals have different hardnesses?

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5. Name the mineral that can readily be identified by the acid test.

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6. According to your Earth Science Reference Tables what are the two most abundant elements in the Earth's crust by mass?

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7. Minerals containing the elements listed above are known as silicate minerals. List at least four silicate minerals using your ESRT.

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8. Some minerals can be identified by a single property. Pyrite is one example. What property is most useful for the identification of pyrite?

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9. What color is biotite? \_\_\_\_\_. There is a second mineral that belongs to the same mineral group as biotite. What is the name of this mineral and how does its color compare to that of biotite?

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10. Explain why the feel of gypsum and talc can be used to distinguish between the minerals?

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11. Which of the minerals you identified are used for the following:

A. Pencil lead and lubricants \_\_\_\_\_

B. Ore(source) of iron \_\_\_\_\_

C. Glass and jewelry \_\_\_\_\_