Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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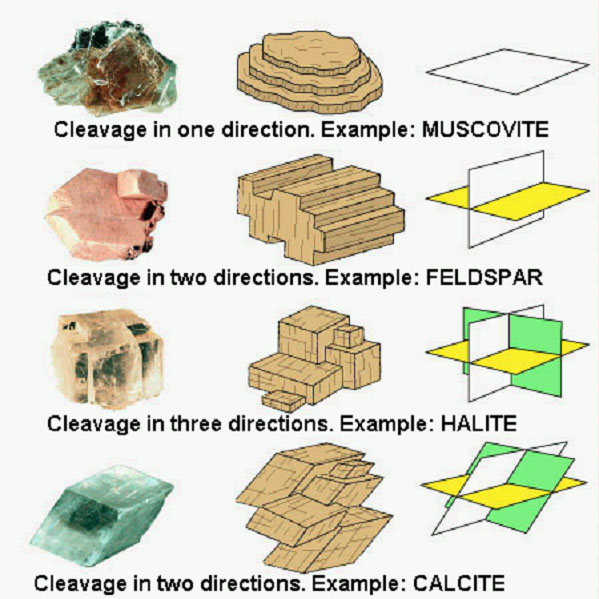
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Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A mineral is a naturally occurring crystalline solid with a fixed chemical composition. The easiest way to identify minerals is to compare physical (and sometimes chemical) properties using your senses and a few common tools. Now, cut out 16- 1”x1” squares of paper, label them A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, and P. Go to the front of the class and pick up one mineral to match up with each of your letters. There are sixteen minerals in front of you, they are **Quartz, Potassium feldspar, Plagioclase feldspar, Fluorite, Sulfur, Olivine, Biotite, Muscovite, Hematite, Magnetite, Calcite, Halite, Hornblende, Pyrite, Gypsum and Talc.** You will now examine the color, luster, cleavage, streak, hardness and other properties to identify each mineral.

1. First try and determine the color of each mineral and fill in the “color” column on your chart. If you are color-blind ask a lab partner to help you with this.
2. Next, determine the luster of the mineral. Next, we will determine if the mineral has metallic or a non-metallic luster. Here are a few rules to determine which minerals are non-metallic and which are metallic. Metallic minerals are usually shiny, never transparent or opaque, leave a colored streak (not white or clear) when rubbed against a porcelain streak plate, cannot be broken apart with your fingers and are sometimes magnetic. Non-metallic minerals can be translucent or clear, they usually leave a white or clear streak when rubbed against a porcelain plate, can sometimes but no always be broken with your fingers and are never magnetic.
3. Next you will determine if the mineral has good cleavage or not. If a mineral has good cleavage it will break in a predictable way. If you can see lines of breakage that are orientated in the same direction than the mineral has good cleavage. Examine the following examples of mineral cleavage.



1. Next, rub each mineral against the provided white porcelain plate and record the streak color.
2. Next try and determine the approximate hardness of the mineral. Use the provided penny, steel nail, your fingernails, and the glass plate to determine hardness. Your fingernail has a hardness of 2.5, so if you can scratch a mineral with your fingernail it has a hardness of less than 2.5, if you cannot it has a hardness greater than 2.5. A penny has a hardness of 2.9. The steel nail has a hardness of 4.5. The glass plate has a hardness of 5.5.
3. Next, for each of the clear minerals drop one drop of acid on it to see if it fizzes. If it fizzes note this in the other properties column. Attach a magnet to each mineral, if it is magnetic note this in the other properties column.
4. Use the data that you filled in with your chart to identify all 16 minerals. First, try and identify quartz, it is clear to white, may form six sided crystals and will scratch glass. It has no cleavage. It has a non-metallic luster.
5. Then identify the other 15 minerals using the below information. These minerals shave the following properties. Use your chart to identify each, write your answer in on your chart.

Potassium Feldspar: Pink, good cleavage in two directions, scratches glass, white streak, non-metallic luster.

Plagioclase Feldspar: White to Grey, good cleavage in two directions, scratches glass, white streak, non-metallic luster.

Fluorite: Green, Purple or Yellow in color, good cleavage to make diamond like shapes, this mineral cannot scratch glass, and you cannot scratch it with your fingernail, non-metallic luster.

Sulfur: Canary Yellow in color, no cleavage, is not transparent, non-metallic luster.

Olivine: Green in color, no cleavage, it will scratch glass, non-metallic luster.

Biotite: Black in color, good cleavage, cannot scratch glass, good cleavage breaks into flexible plates, non-metallic luster.

Muscovite: Silver to clear in color, cannot scratch glass, good cleavage breaks into flexible plates, non-metallic luster

Hematite: Silvery gray to Reddish in color, reddish brown streak, it is not transparent, metallic luster.

Magnetite: Silvery Gray to Black in color, dark grey streak, it is not transparent, it is magnetic, non-metallic luster

Calcite: White or colorless, white streak, opaque or transparent, excellent cleavage often breaks into rhombohedrons, fizzes in HCL acid, non-metallic luster. This mineral will not scratch glass.

Halite: Colorless or white, white streak, opaque or transparent, excellent cleavage often breaks into cubes, non-metallic luster. This mineral will not scratch glass.

Hornblende: Black in color, not transparent, excellent cleavage in two directions, non-metallic luster, this mineral will scratch glass.

Pyrite: This mineral is golden in color, dark gray streak, it often called “fools gold”. It sometimes form cubes. It has a metallic luster.

Gypsum: This mineral is clear to transluscent. This mineral has good cleavage, and the mineral can easily be scratched with your fingernail. It has a non-metallic luster.

Talc: This mineral is clear to white to gray. This mineral feels like soap in your hand. You can use your fingernail to scratch this mineral to make a fine white powder (this is what is used in baby powder). The mineral has non-metallic luster.