Virtual Mineral Lab Name_____

Developed by Dr. Kate Bulinski, Bellarmine University
Companion online unknown samples and supplementary resources from Dr. Scott Brande, University of Alabama Birmingham

Objective: In this lab, you will be examining and identifying a series of unknown mineral samples using pictures, YouTube videos, and an online "mineral bank" of information.

Part 1: Warm Up Questions:

Thinking back to what you've learned about minerals from the lecture, answer the following questions on a separate sheet of paper or document.

1. Imagine you are walking across campus and find what looks like a diamond engagement ring on the ground. You plan to turn it into the public safety lost and found, but before you do that you decide to test the mineral in the ring to see how hard it is. You take the ring and using the gemstone, rub it firmly across a piece of glass and see that it does scratch glass. What does this tell you about the mineral? Can you say for certain that the mineral is a diamond? Explain.

2. One day you attend a rock and mineral show (yes, that's really a thing…) and decide to buy some minerals to give to your 8 year old niece as a birthday present. You decide to only purchase minerals that are a four on the Moh's hardness scale. Explain how you would determine this hardness? What tools would you use? How could you know that the mineral is specifically a 4 and not just in the "soft" category?

3. If a mineral breaks into tiny, pieces of uniform shape and size if you hit it with a hammer, what property does the mineral have? Explain in your own words why this happens to certain minerals but not others.

4. Is color a good property to use to identify a mineral? Explain your answer.

5. Think of a mineral that you use regularly that is found in your house/apartment/dorm/etc. Do a little internet research to answer the following questions about this mineral (cite your sources by providing the web addresses you used)

   a. Name and Composition of mineral:

   b. Properties of mineral (luster, hardness, streak, color, cleavage or fracture, magnetic, effervescent, fluorescent etc.):

   c. Where is this mineral found on the earth?

   d. What is this mineral used for?

   Sources:

Part 2: Mineral Identifications

In this laboratory activity, you will be using a series of observations to identify ten unknown mineral samples. The observations are based on the qualities that you learned about in this week's lecture: luster, hardness, streak, magnetism, effervescence and more.

Procedure:

1) Example Walkthrough: Note that the first row of the excel table you were given with this lab is an example for unknown #21. Click here to take a look at the information available (there is a lot of information). Close to the top of the page there are a series of links that will take you directly to the portion of the page for testing that mineral unknown for hardness, acid reaction, etc.
    - Luster: Go ahead and click on the link for "Test Luster." Note you will see a video there showing the mineral with a few pictures. This mineral is shiny, but it does not exhibit metallic luster, therefore it is NM in the chart below.
    - Hardness: Next, you will want to observe the test for hardness. Note that it scratches glass, so the hardness is > glass (it is hard).
    - Continue looking at these resources and compare to the chart for the sample to familiarize yourself the remaining characteristics (streak, magnetism, acid reaction, electrical conductance and more). Lastly, you will want to use these criteria and the mineral bank, which contains all possible answers, to name your specimen.
2) Next, click on the webpage and click on your first unknown on the chart below, explore the properties, use the mineral bank and completely fill out the excel answer sheet. Continue this process until you have identified all 18 of your unknowns. Note: as you narrow down your identifications, you may also want to consult this website for some additional pictures and information about common minerals. You will not be identifying all minerals from the website, so pay attention to the sample numbers.

If you have your Rock & Mineral kit, you may find it helpful to use these samples to check your answers. Once you think you've tentatively identified a sample in the online lab, you can compare it to the appropriate sample from your kit. Test the hardness, cleavage/fracture, streak, and any other relevant properties*. You will still be able to complete this lab without your kits.

*Note that minerals can appear highly variable. Just because the sample in your kit does not look the same as the one online does not mean they're not the same. They may have crystals of different sizes, no visible crystals at all, or impurities that alter the color. It is to get around problems like this that we use a range of properties to identify minerals.

Rock & Mineral Kit samples you should consider: 1, 2, 3, 4, 5, 6, 7, 36, 37, 38, 39, 44, 45