

Name _____

Date _____

Mineral Identification Lab

Introduction

One of the most important scientific skills is observing. Being a good observer means more than noticing things with your eyes. Observing in science involves all of your senses.

When scientists work with minerals, they may use sight, touch, and even smell to determine the identity of a mineral sample. There are many properties that can be observed and used to identify minerals. Some properties you have studied are:

- color
- luster
- streak
- hardness
- cleavage

In this lab, you will practice making observations by investigating the properties of several mineral samples. Then you will identify each mineral based on your observations.

Hypothesis

Before you conduct a scientific test, you should think about what you predict will happen. Take a few minutes now to observe Samples 7, 13, 23, 25, and 27. Which sample or samples do you think will be hardest? Which sample or samples do you think will have a yellow streak?

Materials

Supplied

Rock and Mineral Kit
magnifying glass or hand lens
streak plate
magnet

Not Supplied

eyedropper
penny
nail
glass
white vinegar



Safety Stop

Have you read the safety information for this lab activity? If not, return to the lesson and do so now.

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Procedure

Watch the ***Testing an Unknown Mineral*** video to collect data for sample 26.

Observation 1: Color

Examine Sample 13 and observe its color. Record it in the Mineral Identification Data Table.

Observation 2: Streak

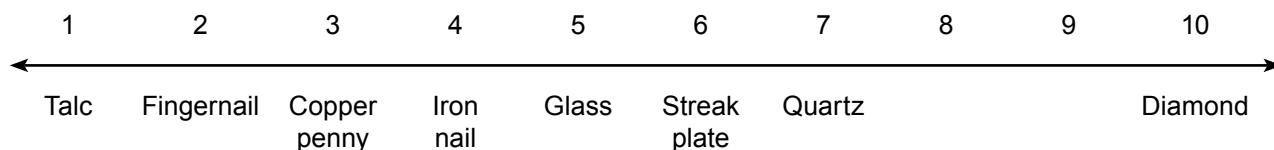
Scrape the sample across the streak plate and observe the color of its streak. Record the color in the data table.

Observation 3: Cleavage or Fracture

Observe the edges of the sample. Does the sample show cleavage, meaning that its edges are broken in flat planes? Or does it just show fracture, meaning that the edges are broken irregularly? Watch the ***Breaking Minerals*** video and then check your observations with those listed in the data table.

Observation 4: Hardness

The diagram below shows how some common materials compare in terms of hardness. Scientists use a numbered scale called the Mohs Hardness Scale to rate the hardness of minerals. Minerals range in hardness from 1 (talc) to 10 (diamond).



Start by trying to scratch the sample with your fingernail, and then move up to harder objects if you need to (you do not have to scratch the sample with a diamond). The sample will be scratched by objects with a higher hardness. The sample will scratch objects with a lower hardness.

How do you know if your sample has been scratched? After scratching, try to wipe the scratch away with your finger. If the scratch disappears, the sample was not actually scratched. Record the hardness in the data table.

Observation 5: Magnetism

Touch the sample with the magnet. Observe if it is attracted to the magnet.

Observation 6: Fizz Test

Use the eyedropper to carefully place a few drops of white vinegar on the sample. If any bubbles form, make a note of it in the column labeled fizz test in your data table.

Observation 7: Luster

Note if the mineral has metallic or nonmetallic luster.

Repeat Observations 1–7 for samples 7, 23, 25, and 27. Record your observations in the data table, and then complete the analysis section of the lab.

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Analysis

Now you will use your observations to identify each mineral. Use the Mineral Identification Key below and your notes.

Mineral Identification Key						
Mineral Name	Color	Streak	Cleavage or Fracture	Hardness	Luster	Special Properties
Graphite	Black	Iron black	Fracture	1–2	Metallic	Feels greasy, can mark paper
Magnetite	Black	Black	Fracture	6	Metallic	Magnetic
Hematite	Black or red	Red-brown	Fracture	1–6.5	Metallic	Magnetic
Galena	Lead-gray	Gray-black	Cleavage	2.5–3	Metallic	Heavy
Talc	White, gray, green	White	Cleavage	1	Nonmetallic	Feels greasy
Sulfur	Pale yellow	Pale yellow	Fracture	1.5–2.5	Nonmetallic	Rotten-egg odor
Halite	Colorless, red, white	White	Cleavage	2.5	Nonmetallic	None
Calcite	Any color, usually white	White	Cleavage	3	Nonmetallic	Fizzes in acids
Quartz	Clear, white, rose, violet, black	White	Fracture	7	Nonmetallic	None
Mica	Clear, brown, green, yellow	Yellow	Cleavage	2.5	Nonmetallic	None

Sample 7: _____

Sample 13: _____

Sample 23: _____

Sample 25: _____

Sample 26: _____

Sample 27: _____

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Conclusion

1. Give two examples of minerals that have a property in common.

2. Could you have identified any of the minerals after having described only a few, rather than all, of the properties you tested? If so, give an example.

3. Why is it still a good idea to test more properties than might be necessary?
