Exploring Physical Properties of Minerals

You have probably seen a few rocks around your house. Do you know that rocks are made of minerals? More than 3,500 different minerals have been found in the earth's crust. A mineral is a solid that occurs naturally in the earth's crust and it is formed from nonliving things. Each mineral has a certain chemical composition. This chemical composition gives the mineral a certain color, hardness and shape.

There are several tests that can be done to identify if a substance is a mineral. One of those tests is called streak. Have you ever heard of Fool's Gold? It is a mineral called pyrite and is golden in color. Many people are tricked into thinking they have found gold when they find pyrite. To tell if the substance is pyrite or gold you can perform a streak test. Pyrite will leave a brown streak while gold will leave no streak at all.

Some minerals are soft and some are hard. You can test minerals for their hardness by scratching them. The physical property of hardness is the resistance to scratching. It is an important property of minerals because a mineral's use is often related to its hardness.

Materials: Pyrite, gold, streak plate, Mineral set, penny, nail, observation sheet

Watch a video segment called The Physical Properties of Minerals from www.missdoctorbailer.com Pay attention to the streak and hardness test.

What To Do:

1. Watch as your teacher performs a streak test for pyrite and for gold.

Questions:

1. What did you observe? _____
2. How can you tell pyrite from gold? _____

_____

2. Watch as your teacher shows how to test each mineral by scratching the minerals **gently** with a penny and a nail.
3. In your basket you will find an observation sheet called Minerals – Soft, Medium and Hard. It is divided into three sections. You will use this sheet to group your minerals while you are doing the tests.
4. Observe the minerals in the mineral set. **Write their colors in the chart on the next page.**
4. Scratch your sample of mineral 1 with the copper penny. **GENTLY!!!**
5. If the penny left a scratch on the mineral place it on the observation sheet in the "Soft" space. If the penny **did not** scratch the mineral put it back in the carton.
6. Test the rest of the minerals with the penny. Place each of them in the "Soft" space or back in the carton.
7. Now focus on the minerals you have returned to the carton.
8. Use the nail to scratch each of them.
9. If the nail scratches a mineral, put it in the space on the observation sheet that is labeled "Medium." If the nail does not scratch the mineral, place it in the space labeled "Hard."
10. Record your results in the chart on the back.
11. Return all the minerals to the correct place in the carton.

Observations:

Mineral Number	Name	Color	Hardness (soft, medium,hard)
1.	Fluorite		
2.	Feldspar		
3.	Hematite		
4.	Pyrite		
5.	Milky Quartz		
6.	Calcite		
7.	Muscovite Mica		
8.	Magnetite		
9.	Gypsum: Alabaster		
10.	Talc		
11.	Pyrolusite		
12.	Biotite Mica		
13.	Graphite		
14.	Gypsum: Satin Spar		
15.	Gypsum Selenite		

Questions:

1. Which was harder the penny or the nail?_____
2. Which minerals were soft? _____
3. Which minerals were medium? _____
4. Which minerals were hard? _____
5. Put the following minerals in order by hardness. Put a 1 by the softest and a 3 by the hardest.

_____ Milky Quartz

_____Talc

_____Fluorite

Physical Properties of Minerals

P U X M K H P E S S C Q P B E
Y B Q J C T J T L T D G E R R
R L E M K P Q A H D R D A M M
I O J P S N R L I J J E X O X
T K V O A E W P C T D L A Z U
E S L O N H C K P C I D I K C
C I Y I V B S A E A R O L O C
D B M S B M R E N Q G F R Y I
O N F L Y K W R W X C O Z N K
K F G Z S L H T Y V K W B N F
H A R D N E S S C H J S U E E
E A Q F N B V I P W N C T P I
Q K J A D I J Z L E T D G C I
V F L X M N Y M T X P C O Y F
G Y H C L N N R B R C Z I U N

Color
Hardness
Minerals
Nail
Penny
Pyrite
Shape
Solid
Streak
Streak Plate

Name _____ period _____

EXIT TICKET

Exploring Physical Properties of Minerals

1. What are rocks made from?
   A. leaves and sticks
   B. dead animals
   C. minerals
   D. bones

2. What are two tests you can do to a mineral?
   A. streak and hardness
   B. streak and lightness
   C. mass and streak
   D. hardness and mass

3. How can you tell the difference between pyrite and gold?

   A. pyrite does not have a streak
   B. gold has a golden streak
   C. pyrite has a brown streak and gold does not
   D. gold has a silver streak

4. What is another name for pyrite?
   A. Pirate's gold
   B. 14 Carat gold
   C. Old Man's gold
   D. Fool's gold

5. What two common tools can you use to test hardness?
   A. hammer and screwdriver
   B. penny and nail
   C. hand saw and hammer
   D. nail and hammer

Name _____ period _____

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