

**MINERALS: Chapter 3 Test** ( /30) **Name:** \_\_\_\_\_

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

1. List the five criteria that identify a mineral. (5pts)

-THE SUBSTANCE MUST EXIST AS A SOLID UNDER NORMAL CONDITIONS ON EARTH.  
-THE SUBSTANCE MUST BE NATURALLY OCCURRING (not man-made)  
-THE SUBSTANCE MUST BE INORGANIC (not living or coming from living things)  
-THE SUBSTANCE MUST HAVE A FIXED CHEMICAL FORMULA (a specific combination of elements)  
-THE ATOMS THAT MAKE UP THE SUBSTANCE, MUST BE ARRANGED IN AN ORDERLY STRUCTURE

2. The **DENSITY** of a mineral can be calculated by dividing the mass of the mineral by its volume. (1pt)

3. Describe the difference between fracture and cleavage (2pts)

FRACTURE IS ROUGH, UNPREDICTABLE BREAKS, WHILE CLEAVAGE IS CUBE-LIKE, OR REGULAR, PREDICTABLE BREAKAGE.

4. Sugar is a solid and has a crystalline form, is it a mineral? Why or why not? (2pts)

SUGAR IS NOT A MINERAL BECAUSE IT IS ORGANIC (MADE FROM PLANTS).

5. How do minerals in a cool solution form? (3pts)

MINERALS FORM THROUGH EVAPORATION. THIS HAPPENS IN LAKES AND SEAS, WHERE MINERAL RICH WATERS ARE EXPOSED TO SUNLIGHT.

6. What is magma, and why is it rich in minerals? (3pts)

MAGMA IS MOLTEN ROCK FROM EARTH'S MANTLE, THAT ERUPTS OR MOVES WITH PLATE TECTONICS. IT TAKES THE MINERALS FROM COMPRESSED LITHOSPHERE AND BRINGS IT TO THE SURFACE.

7. How is streak different from color? (2pts)

**STREAK IS THE COLOR OF THE POWDER, WHEN DRAGGED ACROSS A TILE.  
COLOR IS THE REFLECTIVE PROPERTY OF LIGHT OFF THE SOLID FORM.**

8. Using the table below, answer the following questions:

a) What are both graphite and diamonds made of?

b) What can you say about the difference in the hardness of a diamond and of graphite.  
**YOU DO NOT HAVE TO USE MOHS HARDNESS SCALE** just explain what you know about the hardness.

c) Describe the difference in luster between a diamond and graphite.

d) Which criteria makes diamonds and graphite different?

	DIAMOND	GRAPHITE
a) MADE OF (1pt)	<b>CARBON</b>	
b) HARDNESS (2pts)	<b>HARDEST MINERAL THERE IS</b>	<b>VERY BRITTLE</b>
c) LUSTER (2pts)	<b>CLEAR AND REFLECTIVE</b>	<b>OPAQUE AND NOT VERY REFLECTIVE</b>
d) WHICH CRITERIA OF MINERALS MAKE DIAMONDS AND GRAPHITE DIFFERENT? (1pt)		
<b>SPECIFIC ATOMIC COMPOSITION (ARRANGEMENT OF ATOMS)</b>		

9. Bakelite was one of the first plastics. It was developed by a chemist in 1907. It is formed from a reaction of phenol and formaldehyde and is a brown solid.

Is bakelite a mineral or not? (1pt)

**NO, BAKELITE IS NOT A MINERAL. IT IS MAN-MADE, NOT NATURALLY OCCURRING.**

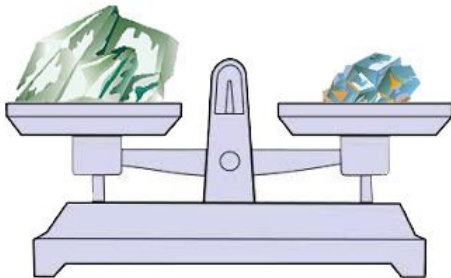
10. Obsidian is a black substance formed when magma cools and hardens. It has a hardness of 5-6 and a glassy luster. Obsidian contains  $\text{SiO}_2$  and other minerals. Its composition varies. Obsidian does not have a crystalline structure.

Is obsidian a mineral or not? How do you know? (2pts)

**OBSIDIAN IS NOT A MINERAL BECAUSE ITS COMPOSITION VARIES AND IT DOES NOT HAVE A CRYSTALLINE STRUCTURE.**

11. If a large mineral has the same mass as a small mineral, which has a greater density? How do you know? (3 pts)

**THE SMALLER HAS GREATER DENSITY. THE MOLECULES ARE MORE TIGHTLY PACKED, SO IT WEIGHS MORE PER VOLUME ( $\text{cm}^3$ ).**



**BONUS:** Color, streak, hardness, luster and breakage are all properties that help us to identify minerals. Name two other properties that help us identify minerals. (2pts)

**-TASTE**

**-SMELL**

**-MAGNETISM**

**-DOUBLE REFRACTION**