Unit: Nature of Matter- Density& Particles of matter

Instruction: answer all question.

Mass= measurement of the amount of matter (or particles) in an object. Mass is measured in grams (g)

Volume = measurement of the amount of space an object takes up. Volume is measured in millilitres (ml) or cm^3. Volume = LxWxH

The mass of a substance indicates the amount of matter which it is made of. The volume of a substance is the amount of space it occupies or take up.

When mass is divided by volume, it tells how heavy a volume of $1cm^3$ of the substance is. The heavier $1cm^3$ of the substance is, the more compact or tightly packed are the atoms or particles that make up the substance. The more particles or atom in a given volume of substance the more dense the substance is

Density is the mass per unit volume of a substance. OR the amount of matter within a certain volume.

The (D) of a solid is found by the ratio of its mass (m) to its volume (V).

Formula: $D = \frac{m}{V}$

The unit for density is g/cm^3

Activity

1. The mass of a book is 520 g and its volume is $80cm^3$. What is the density?
2. Calculate the density of a metal bob which has a mass of 232 g and a volume 18 cm^3.
3. Complete the table below.

Mass	**Volume**	**Density**
125g		25g/cm3
96g	4cm3	
	8cm3	13g/cm3
306g	15cm3	
	17cm3	22g/cm3
185g		16.8g/cm3

4. What is the density of an object that has a mass of 184g and a volume of 50cm^3.

5. Your aunt brings you a gold bar from her visit to Egypt. It measures 10 cm x 5 cm x 2 cm and has a mass of 1,930 g. What is the density of the gold bar? (**Show your work**)

6. A rectangular block of copper metal weighs 1896 g. The dimensions of the block are 8.4 cm by 5.5 cm by 4.6 cm. From this data, what is the density of copper?
(Show your work).

7. What volume of silver metal will weigh exactly 2500.0 g. The density of silver is 10.5 g/cm^3.

8. A geologist finds a rock and breaks it into two pieces to examine the crystals inside. The two pieces of the rock are then labelled Sample A and Sample B. Sample A is twice as large as Sample B. Which of the following statements is true?
a. Sample A is denser than Sample B.

   b. Sample B is denser than Sample A.

   c. Sample A and Sample B have the same density.

   d. Sample A and Sample B are both less dense than the original rock.

9. Given the mass and density of an object, which equation should be used to calculate the volume of the object?
   a) Volume = $\frac{\text{mass}}{\text{density}}$

   b) Volume = $\frac{\text{density}}{\text{mass}}$

   c) Volume =density + mass

   d) Volume=density × mass

10. A machine shop worker records the mass of an aluminum cube as 176 g. If one side of the cube measures 4 cm, what is the density of the aluminum?

11. A rock with a volume of 9.0cm^3 and density of 7.0g/cm^3 has a mass of _____.

Particles of matter

12. The particle Theory states that

_____

_____

_____

13. As the amount of energy in matter increases, the bonds between it particles

_____

14. State whether each of the following is TRUE or FALSE.
    a. When a solid melts it particles slowly cease to exist._____

    b. A solid can stay in one place because its particles are at rest. _____

    c. When you increase the temperature, the speed of the particles will increase. _____

15. Bothe the volume and the shape of matter depends on the _____ between their particles.

Complete the passage using the words below. Some words can be used once, more than once or not at all.

states	substances	liquid	closely	particles	space	
elements	vibrate	random	combine	force	matter	energy

16. The particles of matter fit together in different ways to form different _____. The _____ of solids are _____ packed and they can only _____ in a fixed position. Their particles are held together by a strong _____.

    Liquid particles flow past each other and move in a _____ motion. The _____ of gases have a lot of _____ and move around quickly. Gas particles will move to fill the available _____.