

Review Questions:

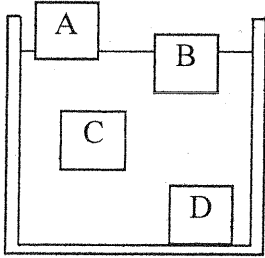
1. A student measures the volume of a rock sample to be  $48.6 \text{ cm}^3$ . The density of the rock sample is  $5.3 \text{ g/cm}^3$ . Calculate the mass of the rock sample.

~~$48.6 \times 5.3$~~   $M = D \cdot V$   
 $M = 48.6 \text{ cm}^3 \times 5.3 \text{ g/cm}^3$   $257.58 \text{ g}$

The correct mass of the sample should have been  $259.6 \text{ g}$ . What is the student's percent error?

$\frac{\text{WRONG VALUE} - \text{CORRECT VALUE}}{\text{CORRECT VALUE}} \times 100\%$   
 $\frac{257.58 - 259.6}{259.6} \times 100\% = \boxed{0.778\%}$

Base your answer to questions 2 through 4 on the diagram below. The diagram shows the location of four objects, A, B, C, and D, after they were placed in a container of water.



2. Which object is most probably an ice cube? FLOATS A  
 3. Which object has the same density as the liquid? C  
 4. List the objects in order from highest to lowest density.

D    C    B    A

5. What is the density of an irregular shaped object that has a volume of 3.0 milliliters and a mass of 12 grams?

~~$12 \text{ g} / 3 \text{ mL}$~~   $\frac{12 \text{ g}}{3 \text{ mL}} = \boxed{4 \text{ g/mL}}$

6. If the object were cut in half, what would the density of each half be? 4 g/mL

7. As the volume of air expands due to heating, describe the change that will occur to the density.

Vol  $\uparrow$     Density  $\downarrow$

Base your answers to questions 8 through 10 on the data table below. The table shows the mass and volume of three liquids A, B, and C.

Liquid	Volume (mL)	Mass (g)	Density (g/mL)
A	500	400	0.8
B	500	500	1.0
C	500	600	1.2

8. List the liquids in order of decreasing densities. C    B    A  
 9. If half of liquid A is removed from its container, how will the density of the remaining liquid compare to the original density? stays same

10. The accepted mass for liquid C is 600 grams, but a student measures the mass as 612 grams. What is the percent deviation of the student's measurements?

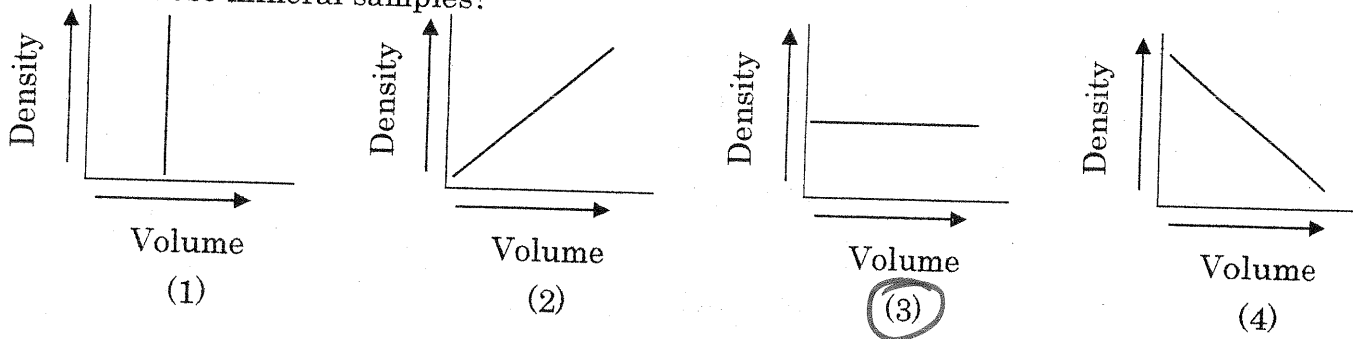
$\frac{612 - 600}{600} = \frac{12}{600} \times 100\% = \boxed{2\%}$

Base your answers to questions 8 and 9 on the data tables below. The data table below shows the mass and volume of three samples of the same mineral.

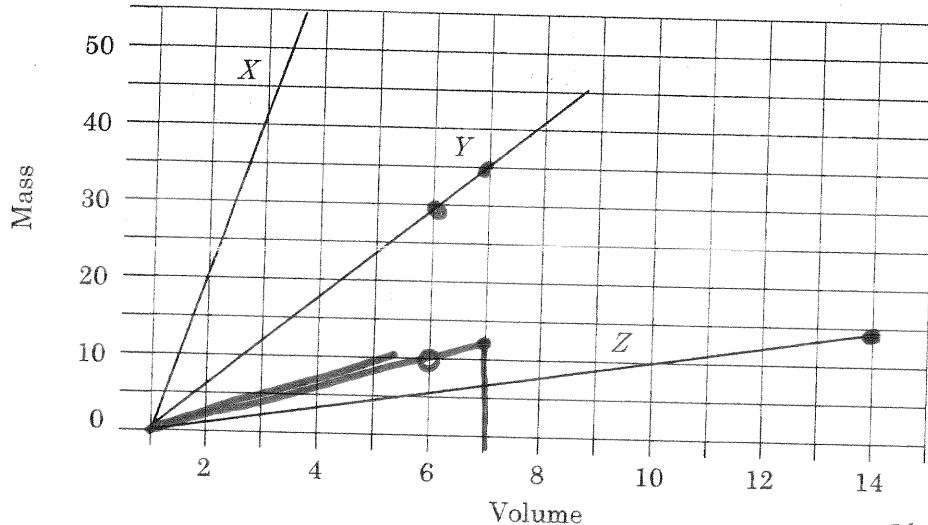
11. Determine the density of each of the samples below.

Sample	Mass (g)	Volume (cm <sup>3</sup> )	Density (g/cm <sup>3</sup> )
A	50	25	2
B	100	50	2
C	150	75	2

12. Which graph best represents the relationship between the density and the volume of these mineral samples?



Base your answers to questions 10 through 12 on the graph below which shows the relationship between mass and volume for three materials X, Y, and Z which are at a temperature of 20°C.



13. What is the approximate density of material Y? *Pick a spot  $\frac{30}{6} = 5$   $\frac{35}{7} = 5$*

(1) 1.0 g/cm<sup>3</sup> (2) 0.2 g/cm<sup>3</sup> (3) 5.0 g/cm<sup>3</sup> (4) 10.0 g/cm<sup>3</sup>

14. When the volume of material Z is 14 cubic centimeters, its mass is

(1) 8 g (2) 10 g (3) 14 g (4) 16 g

15. Using the graph above, draw the line graph on for a material that has a volume of 7 cubic centimeters and a mass of 12 grams.

$$\text{Density} = \frac{12}{7} = 1.7 \text{ g/cm}^3$$