

MATTER PROPERTIES EXAM

NAME AND SURNAME:-----

1) Define the following concepts: 1 point

a) Matter.

b) Inertia.

ANSWER:

a) MATTER: it is everything that has mass and occupies space.

b) INERTIA: it is the resistance a body offers to changes to its state of rest or movement.

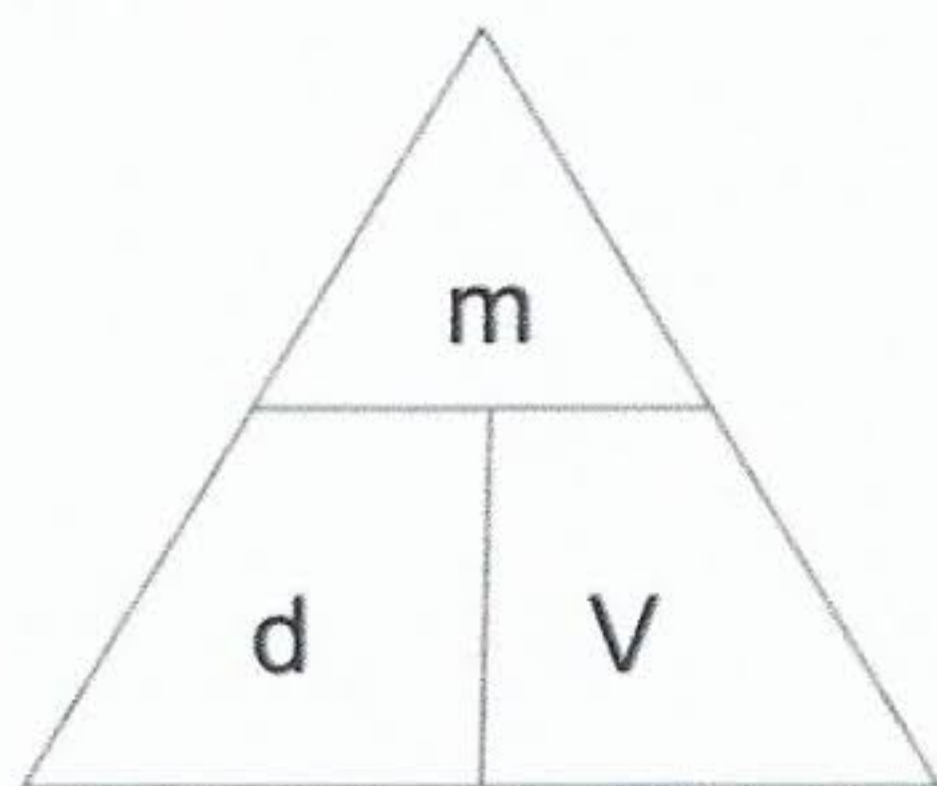
2) A bar of soap is 12 cm tall, 6 cm wide and 10 cm long. It has a mass of 415 grams. What is the density of the bar of soap? 2 points

SOLUTION:

Let us calculate the volume first:

$$V = 12 \cdot 6 \cdot 10 = 720 \text{ cm}^3$$

Then, we are going to calculate the density which is the quantity we have been asked for:

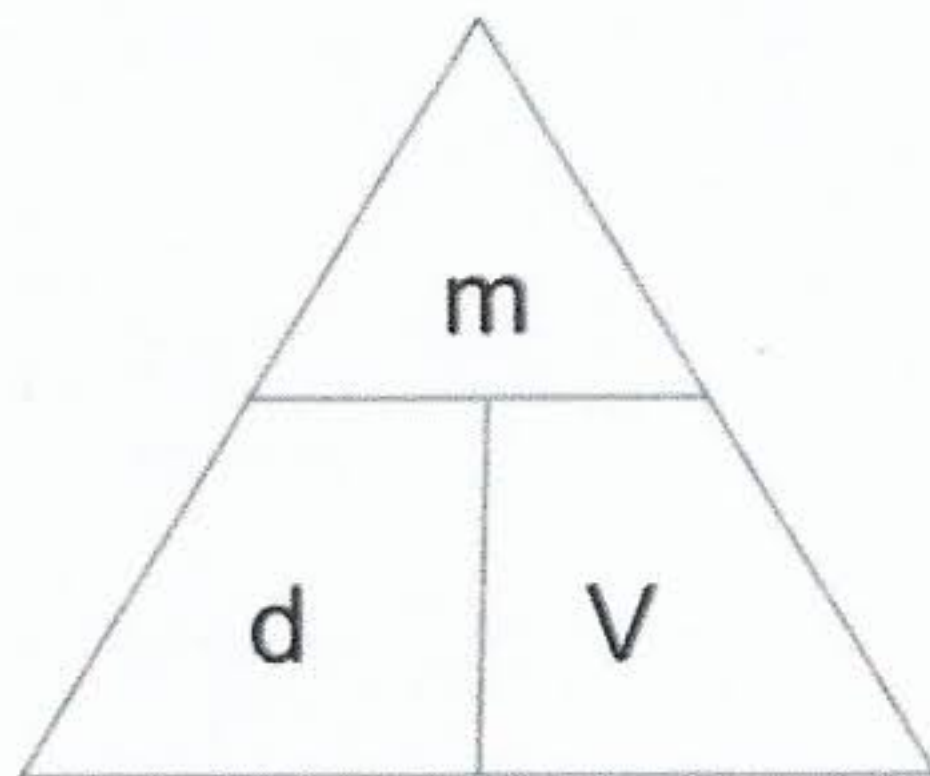


$$d = \frac{m}{V}$$

$$d = \frac{415 \text{ g}}{720 \text{ cm}^3} = 0,58 \text{ g/cm}^3$$

3) A pencil has a density of 0,875 g/mL. It has a mass of 3,5 g. What is the volume? 2 points

SOLUTION:

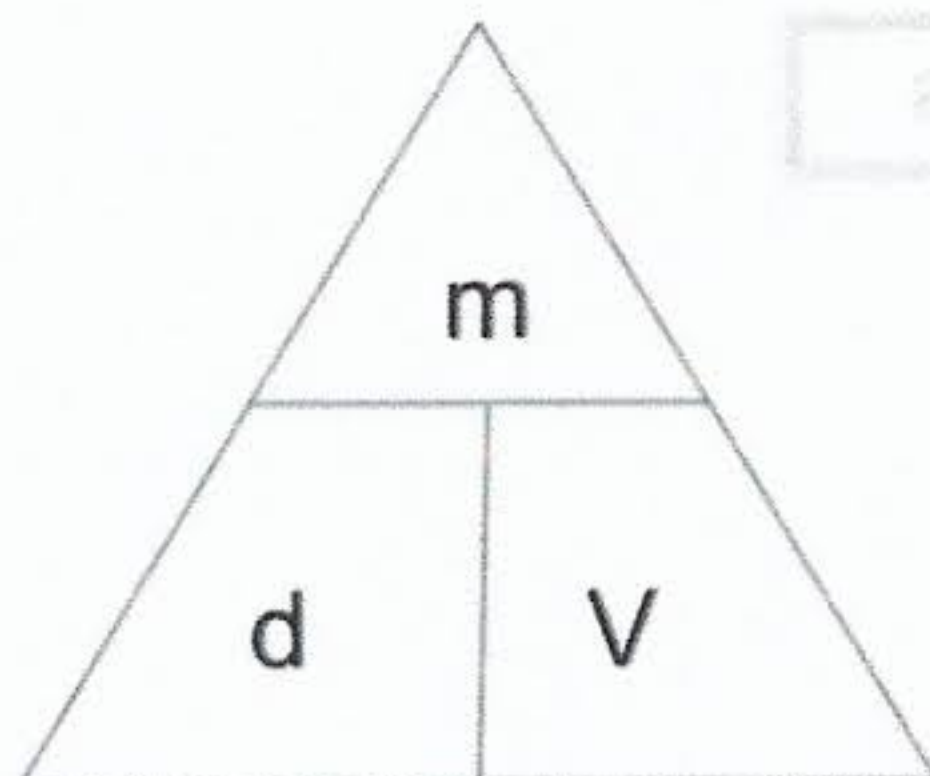


$$V = \frac{m}{d}$$

$$V = \frac{3,5 \text{ g}}{0,875 \text{ g/mL}} = 4 \text{ mL}$$

4) If the density of 45 cm³ block of wood is 0,65 g/mL, calculate the wood's mass. 2 points

SOLUTION:



$$m = d \cdot V$$

$$m = 0,65 \frac{\text{g}}{\text{mL}} \cdot 45 \text{ mL} = 29,25 \text{ g}$$

5) By means of conversion factors, transform the following units:

2 points

a) 7,14 g/cm³ into kg/m³

b) 19 300 kg/m³ into g/cm³

c) 1740 kg/m³ into g/cm³

d) 10,5 g/cm³ into kg/m³

SOLUTION:

$$a) 7,14 \frac{g}{cm^3} \cdot \frac{1 kg}{1000 g} \cdot \frac{1\,000\,000 cm^3}{1 m^3} = 7\,140 kg/m^3$$

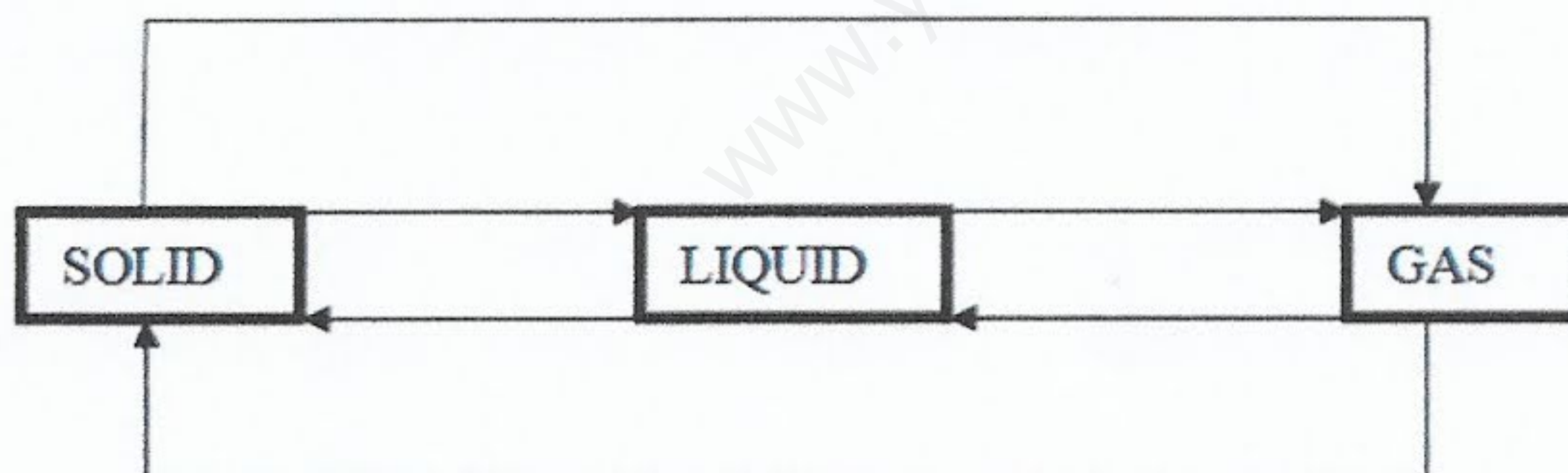
$$b) 19\,300 \frac{kg}{m^3} \cdot \frac{1000 g}{1 kg} \cdot \frac{1 m^3}{1\,000\,000 cm^3} = 19,3 g/cm^3$$

$$c) 1\,740 \frac{kg}{m^3} \cdot \frac{1000 g}{1 kg} \cdot \frac{1 m^3}{1\,000\,000 cm^3} = 1,74 g/cm^3$$

$$d) 10,5 \frac{g}{cm^3} \cdot \frac{1 kg}{1000 g} \cdot \frac{1\,000\,000 cm^3}{1 m^3} = 10\,500 kg/m^3$$

6) Fill the following diagram with the corresponding names of the changes of state:

1 point



ANSWER:

