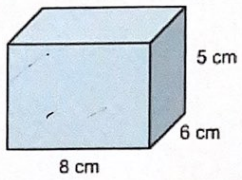
Quick Test Density

1. The diagram shows a solid cuboid made of wood.
The wood has a density of 0.56 grams per cm cubed.
Calculate the mass of the cuboid.



$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$

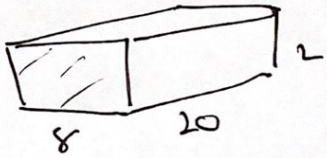
$0.56 = \frac{\text{Mass}}{240}$

$0.56 \times 240 = \text{Mass}$

Mass $= 134.4\text{g}$

Volume = Area × Depth
$= (8 \times 5) \times 6$
$= 240\text{cm}^3$

2. The density of gold is 19.4 grams per cm cubed.
A gold ingot is produced in the shape of a cuboid.
The cuboid has length 20cm, width 8cm, height 2cm.
Work out the mass of the gold ingot.
Give your answer in kilograms



$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$

$19.4 = \frac{\text{Mass}}{320}$

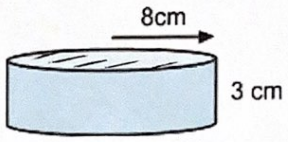
$19.4 \times 320 = \text{Mass}$

$6208 = \text{Mass}$

Mass $= 6.208\text{kg}$

Volume = Area × Depth
$= (8 \times 2) \times 20$
$= 320\text{cm}^3$

3. A solid cylinder is made of wood.
It has a radius of 8cm and a height of 3cm
The cylinder has a mass of 392 grams
Work out the density of the wood



Give your answer correct to 2 significant figures.

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$= \frac{392}{192\pi}$$

$$= 0.649\ldots \text{ g/cm}^3$$

$$= 0.65 \text{ g/cm}^3$$

$$\text{Volume} = \text{Area} \times \text{Depth}$$

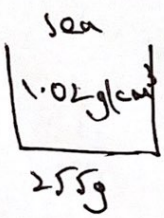
$$= \pi r^2 \times 3$$

$$= \pi 8^2 \times 3$$

$$= 192\pi$$

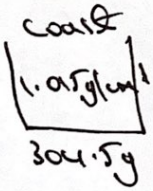
$$= (603.185\ldots)$$

4. Seawater has a density of 1.02g/cm^3.
255g of seawater mixes with some freshwater, to form coastal water.
The coastal water has a mass of 304.5g, and a density of 1.015g/cm^3 .
Find the density of the freshwater.



$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} \Rightarrow 1.02 = \frac{255}{\text{Volume}} = 250 \text{ cm}^3$$

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} \Rightarrow \frac{304.5 - 255}{300 - 250} = 0.99 \text{ g/cm}^3$$



$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} \Rightarrow 1.015 = \frac{304.5}{\text{Volume}} = 300 \text{ cm}^3$$