Warm-up activity

Here is a formula: $d = \frac{m}{v}$

a) Work out the value of d when $m = 18$ and $v = 3$

b) Rearrange the formula to make m the subject.

c) Work out the value of m when $d = 5$ and $v = 10$

d) Rearrange the formula to make v the subject.

e) Work out the value of v when $m = 28$ and $d = 4$

α Alpha Exercise

a) A block with a volume of **8 cm³** weighs **80 g**. What is the density of this block in g/cm³?

b) A **1 cm x 2 cm x 10 cm cuboid** weighs 80 grams. What is the density of the cuboid?

c) A gym ball with a volume of **800 cm³** has a mass of 1600 g. What is the density of the ball?

β Beta Exercise

a) A **2 cm x 5 cm x 6 cm cuboid** weighs **30 grams**. What is the density of the cuboid?

b) Silver has a density of **10.5 g/cm³**. How much does **5 cm³** of silver weigh?

c) What is the volume of an object that weighs **40 g** and has a density of **4 g/cm³**.

γ Gamma Exercise

a) A **cube of side 2 cm** has a mass of **72 grams**. What is the density of the cube?

b) Platinum has a density of **21.4 g/cm³**. How much does **1 m³** of platinum weigh?

c) What is the volume of an object that weighs **450 g** and has a density of **7.5 g/cm³**?

d) A ball with a volume of **900 cm³** has a mass of 225 g. What is the density of the ball? Will this ball float on water? (Water has a density of 1 g/cm³.)

Explain the mistake

Denise answers this question as follows:

Iridium has a density of 22.56 g/cm^3. How much does 1 m^3 of gold weigh? Give your answer in kg.

Each cm^3 of iridium weighs 22.56 g.
So 100 cm^3 weighs 22.56 x 100 = 2256 g.
Therefore 1 m^3 of iridium weighs 2256 g or 2.256 kg.

Denise has made a mistake. What is it?

Exam-style question

Wu has made a bronze sculpture.
The sculpture weighs 384.5 kg.
The density of the bronze used is 7.8 g/cm^3.
What is the volume of the sculpture, correct to the nearest cm^3?

Challenge

A scientist has a measuring jug with a capacity of 800 cm^3. The measuring jug weighs 90 g when empty.

The scientist adds 200 cm^3 of liquid A and 600 cm^3 of liquid B to the jug, so the jug is now full and has a mass of 850 g.

The mass of 200 cm^3 of liquid A is equal to the mass of 350 cm^3 of liquid B.

What is the density of liquid A?