

Density and Pressure

- (a) The mass of 3 m^3 of zinc is 21420 kg. Find the density of zinc in kg/m^3 .
- (b) Find the density of a piece of wood with a mass of 135 g and a volume of 150 cm^3 .
- (c) The density of gold is 19.5 g/cm^3 . Find the mass of 18 cm^3 of gold in grams.
- (d) A brick of mass 3000 g has a density of 7.5 g/cm^3 . Calculate the volume of the brick in cm^3 .

(a) 7140 kg/m^3

(b) 0.9 g/cm^3

(c) 351g

(d) 400 cm^3

- (a) A force of 80N acts over an area of 10 m^2 . What is the pressure?
- (b) A pressure of 8 Pa acts on an area of 0.25 m^2 . What force is exerted?
- (c) A crate weighs 200 N and exerts a pressure of 40 Pa on the ground. What is the area of the base of the crate?

(a) 8 Pa

(b) 2 N

(c) 5 m^2

- (a) A classroom is 7 m long by 5 m wide by 3 m high. If the density of air in room temperature is about 1.3 kg/m^3 , how many kg of air does this room contain?
- (b) A force of 70 N acts on an area of 20 cm^2 . The force is increased by 10 N and the area is increased by 10 cm^2 . Does this increase or decrease the pressure?
- (c) Why do camels have large, wide feet?

(a) 136.5 kg

(b) Decrease

(c) To reduce pressure, so they can walk over sand

- (a) Two pieces of scrap metal are melted down to make a single piece of metal. The first piece has a mass of 1500 kg and a density of 7000 kg/m^3 . The second piece has a mass of 1000 kg and a density of 8000 kg/m^3 . Work out the total volume of the new metal.
- (b) Liquid A has a density of 0.7 g/cm^3 and liquid B has a density of 1.6 g/cm^3 . 140 g of liquid A and 128 g of liquid B are mixed to make liquid C. Find the density of liquid C.

(a) 0.339 m^3 (3dp)

(b)

	D	M	V
A	0.7	140	200
B	1.6	128	80

$D = \frac{268}{280} = 0.96 \text{ g/cm}^3$
(2dp)