

Interleaved: speed, density and pressure

ANSWERS 

1

A cyclist rides 45 km in 2.5 hours.
Work out her average speed.

Which method? ☒ Speed ☐ Density ☐ Pressure
 $speed = distance \div time = 45 \div 2.5$

Answer 18 km/h

2

A block of oak has a mass of 1800 g and a volume of 2500 cm³. Work out its density.

Which method? ☐ Speed ☒ Density ☐ Pressure
 $density = mass \div volume$

Answer 0.72 g/cm³

3

A force of 600 N acts on an area of 1.5 m².
Work out the pressure.

Which method? ☐ Speed ☐ Density ☒ Pressure
 $pressure = force \div area$

Answer 400 N/m²

4

A train travels at 120 km/h for 45 minutes.
How far does it go?

Which method? ☒ Speed ☐ Density ☐ Pressure
 $45 \text{ minutes} = 0.75 \text{ hours}, 120 \times 0.75$

Answer 90 km

5

A crate stands on an area of 3.2 m² and puts a pressure of 250 N/m² on the floor.
What force does it exert?

Which method? ☐ Speed ☐ Density ☒ Pressure
 $force = pressure \times area$

Answer 800 N

6

Gold has a density of 19.3 g/cm³.
A gold bar has a mass of 965 g.
Find its volume.

Which method? ☐ Speed ☒ Density ☐ Pressure
 $volume = mass \div density$

Answer 50 cm³

7

A statue with a weight of 450 N puts a pressure of 180 N/m² on its plinth.
What area is in contact with the plinth?

Which method? ☐ Speed ☐ Density ☒ Pressure
 $area = force \div pressure$

Answer 2.5 m²

8

A sprinter runs 400 m at an average speed of 6.4 m/s. How long does she take?

Which method? ☒ Speed ☐ Density ☐ Pressure
 $time = distance \div speed$

Answer 62.5 s

Interleaved: speed, density and pressure *further practice*

ANSWERS 

9

A lorry drives 156 miles in 3 hours 15 minutes. Work out its average speed in miles per hour.

$3 \text{ hours } 15 \text{ minutes} = 3.25 \text{ hours}$

Answer 48 mph

10

A metal cube has sides of 4 cm and a mass of 172.8 g. Work out the density of the metal.

$volume = 4^3 = 64 \text{ cm}^3, 172.8 \div 64$

Answer 2.7 g/cm³

11

A box weighs 120 N. Its base is 0.8 m by 0.5 m. Work out the pressure it puts on the floor.

$area = 0.8 \times 0.5 = 0.4 \text{ m}^2, 120 \div 0.4$

Answer 300 N/m²

12

Ice has a density of 0.92 g/cm³.
Work out the mass of 2.5 litres of ice.
Give your answer in kilograms.

$2.5 \text{ litres} = 2500 \text{ cm}^3, 0.92 \times 2500 = 2300 \text{ g}$

Answer 2.3 kg

13

A drone flies at 15 m/s.
How many kilometres does it fly in 8 minutes?

$8 \text{ minutes} = 480 \text{ s}, 15 \times 480 = 7200 \text{ m}$

Answer 7.2 km

14

An elephant has a weight of 48,000 N.
Each of its four feet has an area of 0.12 m². Work out the pressure on the ground when it stands on all four feet.

$area = 4 \times 0.12 = 0.48 \text{ m}^2, 48,000 \div 0.48$

Answer 100,000 N/m²

15

300 cm³ of a liquid with density 1.2 g/cm³ is mixed with 200 cm³ of a liquid with density 0.8 g/cm³.
Work out the density of the mixture.

$mass \ 360 + 160 = 520 \text{ g}, volume \ 500 \text{ cm}^3$

Answer 1.04 g/cm³

16

Ava says a car that travels 90 km in 1 hour 30 minutes has an average speed of $90 \div 1.3 = 69.2 \text{ km/h}$. Explain her mistake and find the correct speed.

$30 \text{ minutes is } 0.5 \text{ hours, not } 0.3: 90 \div 1.5$

Answer 60 km/h