

Q Compound Measures (Speed, Density)

- 6** The mass of a solid metal cuboid is 4 kg. The volume of the cuboid is 600 cm^3 .

Calculate the density of the metal, giving your answer in g/cm^3 .

[Density = mass $\div$ volume]

..... g/cm^3 [2]

- 3** A car travels 300 metres in 20 seconds.

Find the average speed of the car in

(a) metres per second,

..... m/s [1]

(b) kilometres per hour.

..... km/h [2]

- (e) A stone has volume 45 cm^3 and mass 126 g.
Find the density of the stone, giving the units of your answer.

[Density = mass $\div$ volume]

..... [2]

- 11 A bronze sphere has radius 3.6 cm.
The density of bronze is 8.05 g/cm^3 .

Find the mass of the sphere.

Give your answer **in kilograms**, correct to the nearest gram.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

[Density = mass $\div$ volume.]

..... kg [4]

- 4 A train journey takes 5 hours 54 minutes.

- (a) The journey starts at 09 15.

Find the time that the journey ends.

..... [1]

- (b) The average speed of the train for this journey is 80 km/h.

Calculate the distance travelled.

..... km [2]

- 7 Kendra jogs 7 km in 45 minutes.
She then runs at 12 km/h for 30 minutes.

Find her average speed in km/h for the whole journey.

..... km/h [3]

- 7 Lee cycles for 60 km at an average speed of 30 km/h.
He then returns along the same route at an average speed of 20 km/h.

Find Lee's average speed for the whole journey.

..... km/h [3]

- 8 Beatrice walks 1 km at a speed of 4 km/h and then 2 km at a speed of 4.5 km/h.

Work out Beatrice's average speed for the whole journey.

..... km/h [3]

- 8 Jasmine drives a distance of a km at a speed of 50 km/h.
She then drives a distance of b km at a speed of 60 km/h.
She takes a total time of T hours for this journey.

Find a formula for T in terms of a and b .

$$T = \dots\dots\dots [2]$$

- 4 A truck of length 10 m passes a gate of length 2 m.
The speed of the truck is 8 m/s.

Find the time the truck takes to completely pass the gate.

$$\dots\dots\dots \text{ s } [2]$$

- 9 A train is travelling at a speed of 30 m/s.
The length of the train is 70 m.
The train passes through a station of length 170 m.

Find the time the train takes to pass completely through the station.

$$\dots\dots\dots \text{ s } [2]$$

- 14 A train, 1750 metres long, is travelling at 55 km/h.

Calculate how long it will take for the whole train to completely cross a bridge that is 480 metres long.
Give your answer in seconds, correct to the nearest second.

..... s [3]

- 9 A van has length 9 m.

It takes 1 second for the van to completely pass a gate of length 1 m.

Find the speed of the van.
Give your answer in km/h.

..... km/h [2]

- 17** A train of length 105 m takes 11 seconds to pass completely through a station of length 225 m.

Calculate the speed of the train in km/h.

..... km/h [3]

- 14** A train passes through a station at a speed of 108 km/h.
The length of the station is 120 m.
The train takes 7 seconds to completely pass through the station.

Work out the length of the train.

..... m [3]