

1. Adam cycled 24 km in 2 hours.

Work out his average speed.

$$\begin{aligned} \text{Speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{24}{2} \end{aligned}$$

.....12..... km/h
(Total 2 marks)

2. Stuart drives 180 km in 2 hours 15 minutes.

Work out Stuart's average speed.

$$2 \text{ hrs } 15 \text{ mins} = 2.25 \text{ hrs}$$

$$\begin{aligned} \text{Speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{180}{2.25} \end{aligned}$$

.....80..... km/h
(Total 3 marks)

3. Joe travelled 60 miles in 1 hour 30 minutes.

Work out Joe's average speed.

Give your answer in miles per hour.

$$\begin{aligned} \text{Speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{60}{1.5} \end{aligned}$$

.....40..... miles per hour
(Total 2 marks)

4. The distance from Liverpool to Prague is 1200 km.
A flight from Liverpool to Prague lasts 4 hours.

Work out the average speed of the aeroplane.

$$\begin{aligned} \text{Speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{1200}{4} \end{aligned}$$

.....300..... km/h
(Total 2 marks)

5. Mia drove a distance of 343 km.
She took 3 hours 30 minutes.

Work out her average speed.
Give your answer in km/h.

$$\begin{aligned} \text{Speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{343}{3.5} \end{aligned}$$

.....98..... km/h
(Total 3 marks)

6. The distance from London to New York is 3456 miles.
A plane takes 8 hours to fly from London to New York.

Work out the average speed of the plane.

$$\begin{aligned} \text{Speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{3456}{8} \end{aligned}$$

.....432..... miles per hour
(Total 2 marks)

7. A car travels for 3 hours.
Its average speed is 75 km/h.

Work out the total distance the car travels.

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{distance} = \text{speed} \times \text{time}$$

$$= 75 \times 3$$

$$= 225$$

..... 225 km

(Total 2 marks)

8. Daniel leaves his house at 07 00.

He drives 87 miles to work.

He drives at an average speed of 36 miles per hour.

At what time does Daniel arrive at work?

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$



$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

$$= \frac{87}{36}$$

$$= \frac{29}{12} \text{ hours (2 hours 25 mins)}$$

..... 0925

(Total 3 marks)

9. Fred runs 200 metres in 21.2 seconds.

- (a) Work out Fred's average speed.
Write down all the figures on your calculator display.

$$\begin{aligned} \text{speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{200}{21.2} \end{aligned}$$

9.433962264..... metres per second

(2)

- (b) Round off your answer to part (a) to an appropriate degree of accuracy.

9.43 (3sf)
..... metres per second

(1)

(Total 3 marks)

10. A plane flies 1400 kilometres in 2 hours 20 minutes.

Calculate the average speed, in km/h, of the plane.

$$\begin{aligned} \text{speed} &= \frac{\text{distance}}{\text{time}} \\ &= \frac{1400}{2\frac{1}{3}} \end{aligned}$$

..... 600 km/h

(Total 3 marks)

11. John travelled 30 km in 1.5 hours.
Kamala travelled 42 km in 2 hours.

Who had the greater average speed?
You must show your working.

$$\begin{aligned}
 \text{John: speed} &= \frac{\text{distance}}{\text{time}} \\
 &= \frac{30}{1.5} \\
 &= 20 \text{ km/h}
 \end{aligned}$$

$$\begin{aligned}
 \text{Kamala: speed} &= \frac{\text{distance}}{\text{time}} \\
 &= \frac{42}{2} \\
 &= 21 \text{ km/h}
 \end{aligned}$$

Kamala

(Total 3 marks)

12. The mass of 5 m³ of copper is 44 800 kg.

(a) Work out the density of copper.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$



$$= \frac{44800}{5}$$

$$= 8960 \text{ kg/m}^3$$

..... 8960 kg/m³

(2)

The density of zinc is 7130 kg/m^3 .

(b) Work out the mass of 5 m^3 of zinc.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

$$\begin{aligned}\text{mass} &= \text{density} \times \text{volume} \\ &= 7130 \times 5\end{aligned}$$

.....35650..... kg

(2)

(Total 4 marks)

13. A silver chain has a volume of 5 cm^3 .

The density of silver is 10.5 grams per cm^3 .

Work out the mass of the silver chain.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

$$\begin{aligned}\text{mass} &= \text{density} \times \text{volume} \\ &= 10.5 \times 5 \\ &= 52.5 \text{ g}\end{aligned}$$

.....52.5..... grams

(Total 2 marks)

14. The density of concrete is 2.3 grams per cm^3 .

(a) Work out the mass of a piece of concrete with a volume of 20 cm^3 .

$$\begin{aligned} \text{Mass} &= \text{density} \times \text{volume} \\ &= 2.3 \times 20 \end{aligned}$$

..... 46 grams

(2)

480 grams of a cheese has a volume of 400 cm^3 .

(b) Work out the density of the cheese.

$$\begin{aligned} \text{density} &= \frac{\text{mass}}{\text{volume}} \\ &= \frac{480}{400} \end{aligned}$$

..... 1.2 grams per cm^3

(2)

(Total 4 marks)

15. The volume of a gold bar is 100 cm^3 .

The density of gold is 19.3 grams per cm^3 .

Work out the mass of the gold bar.

$$\begin{aligned} \text{density} &= \frac{\text{mass}}{\text{volume}} \\ \text{mass} &= \text{density} \times \text{volume} \\ &= 19.3 \times 100 \end{aligned}$$

..... 1930 grams

(Total 2 marks)