Speed and Density

Grade 5 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (46 marks) and have a go at the rest. Higher students: complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 70 marks.

Warm-up

1 A car travels 150 km in 5 hours. Work out its average speed. **[2 marks]**

Answer _____

2 A cyclist travels at 70 km/h for 3 hours. How far does she travel? **[2 marks]**

Answer _____

3 A train travels 150 miles at 30 mph. How long does the journey take? **[2 marks]**

Answer _____

4 A runner covers 80 m in 10 seconds. Work out her speed in m/s. **[2 marks]**

Answer _____

5 A car travels 20 miles in 90 minutes. Work out its average speed in miles per hour. **[3 marks]**

Answer _____

Core

6 A block of metal has mass 1400 g and volume 400 cm^3. Work out its density. **[3 marks]**

Answer _____

7 A liquid has density 0.8 g/cm³ and volume 100 cm³. Work out its mass. **[3 marks]**

Answer _____

8 An object has mass 300 g and density 2.5 g/cm³. Work out its volume. **[3 marks]**

Answer _____

9 A car travels for 2 hours at 80 km/h and then for 1 hour at 90 km/h. Work out the total distance. **[3 marks]**

Answer _____

10 A cyclist travels at 40 km/h for 40 minutes. How far does she travel in km? Give your answer to 3 significant figures. **[3 marks]**

Answer _____

Stretch

11 A car travels 60 km in 1 hour and then 40 km in 2 hours. Work out its average speed for the whole journey. **[4 marks]**

Answer _____

12 Change 90 km/h to m/s. **[4 marks]**

Answer _____

13 Change 12 m/s to km/h. **[4 marks]**

Answer _____

14 A gold bar has volume 140 cm^3 and density 19.3 g/cm^3. Work out its mass in kg, to 3 significant figures. **[4 marks]**

Answer _____

15 The density of oil is 0.92 g/cm^3. Work out the mass of 2.5 litres of oil. (1 litre = 1000 cm^3.) **[4 marks]**

Answer _____

Challenge

16 Two cities are 240 km apart. A train travels the first 120 km at 80 km/h and the second 120 km at 60 km/h. Work out its average speed for the whole journey. **[5 marks]**

Answer _____

17 A metal block is a cuboid 5 cm by 4 cm by 10 cm and has mass 1.56 kg. Work out its density in g/cm³. **[5 marks]**

Answer _____

18 Metal A has density 8 g/cm³ and metal B has density 3 g/cm³. 100 cm³ of A is mixed with 200 cm³ of B. Work out the density of the mixture. **[5 marks]**

Answer _____

19 Sound travels at 340 m/s. A flash of lightning is followed by thunder 6 seconds later. How far away is the lightning in km? **[4 marks]**

Answer _____

20 A cyclist rides 18 km at 24 km/h then rests for 15 minutes and rides a further 12 km at 16 km/h. Work out the total time taken in minutes. **[5 marks]**

Answer _____