

Below are problems to solve that involve calculation speed, distance or time. Read each question carefully. Write the formula you will be using to solve the problem. Substitute the numerical values and units into the formula. Do the math and write your answer. **Be sure your answer has units.**

1. A ball rolls across the floor for 20 meters. It takes the ball 4 seconds to move that far. Calculate the speed of the ball.

$$s = d/t = \frac{20\text{ m}}{4\text{ s}} = \underline{5\text{ m/s}}$$

2. A man is in a car. He goes 50 miles in 25 minutes. How fast is he going?

$$s = d/t = \frac{50\text{ mi}}{25\text{ min}} = 2\text{ mi/min}$$

3. An object is moving at the rate of 10 m/s. It continues to move at that rate for 5 seconds. How far did the object move?

$$d = s \times t = 10\text{ m/s} \cdot 5\text{ s} = \underline{50\text{ m}}$$

4. An object is moving at the rate of 60 m/s. It continues to move at that rate for 120 seconds. How far did the object travel?

$$d = s \times t = 60\text{ m/s} \cdot 120\text{ s} = \underline{7200\text{ m}}$$

5. A car is rolling down an 80 meter hill. It travels at a speed of 20 m/s. How long does it take for the car to get to the end of the hill?

$$t = d/s = \frac{80\text{ m}}{20\text{ m/s}} = \underline{4\text{ s}}$$

6. A bicyclist travels 60.0 kilometers in 3.5 hours. What is the cyclist's average speed? (Report your answer to the correct number of significant digits!)

$$s = d/t = \frac{60.0\text{ km}}{3.5\text{ hr}} = 17\text{ km/hr}$$

7. How much time would it take for the sound of thunder to travel 1,500 meters if sound travels at a speed of 330 m/s?

$$t = d/s = \frac{1500 \text{ m}}{330 \text{ m/s}} = \underline{4.5 \text{ s}}$$

8. How much time would it take for an airplane to reach its destination if it traveled at an average speed of 790 kilometers/hour for a distance of 4,700 kilometers? (Report your answer to the correct number of significant digits!)

$$t = d/s = \frac{4,700 \text{ km}}{790 \text{ km/hr}} = \underline{5.9 \text{ hr}}$$

9. What is the airplane's speed in meters/ hour?

$$790,000 \text{ m/hr}$$

10. A snail can move approximately 0.30 meters per minute. How many meters can the snail cover in 15 minutes?

$$d = s \times t = 0.30 \text{ m/min} \cdot 15 \text{ min} = \underline{4.5 \text{ m}}$$

11. Calculate the average speed (in km/h) of a car stuck in traffic that drives 12 kilometers in 2 hours.

$$s = d/t = \frac{12 \text{ km}}{2 \text{ hr}} = \underline{6 \text{ km/hr}}$$

12. How long would it take you to swim across a lake that is 900 meters across if you swim at 1.5 m/s?

$$t = d/v = \frac{900 \text{ m}}{1.5 \text{ m/s}} = \underline{600 \text{ s}}$$

13. How far will a you travel if you run for 10. seconds at 2.0 m/s?

$$d = s \cdot t = 2.0 \text{ m/s} \cdot 10. \text{ s} = 20. \text{ m}$$

14. What is the answer to question #13 in cm?

$$\frac{2000 \text{ cm}}{(2.0 \times 10^3 \text{ cm})}$$

15. What is the answer to question #13 in km?

$$0.020 \text{ km}$$

16. You have trained all year for a marathon. In your first attempt to run a marathon, you decide that you want to complete this 26.2-mile race in 4.5 hours. What would your average speed have to be to complete the race in 4.5 hours? (Report your answer to the correct number of significant digits!)

$$s = d/t = \frac{26.2 \text{ mi}}{4.5 \text{ hr}} = 5.8 \text{ mi/hr}$$