Physics · Mechanics · Worked solutions

Speed and journeys

1. A skater covers 54 m in 9 s. Calculate the average speed.

54 ÷ 9 = 6 m/s.

2. A boat travels at 4 m/s for 35 s. Find the distance travelled.

Distance = speed × time = 4 × 35 = 140 m.

3. A cart moves 96 m at 8 m/s. Find the time taken.

Time = distance ÷ speed = 96 ÷ 8 = 12 s.

4. A runner covers 750 m in 2 min 30 s. Calculate the average speed in m/s.

The time is 150 s. The average speed is 750 ÷ 150 = 5 m/s.

5. A train moves at 72 km/h. Convert this speed to m/s.

72 × 1000 ÷ 3600 = 20 m/s.

Worked solutions · Questions 6–10

6. A toy car covers 25 m in 5 s and then 35 m in 10 s. Find its average speed over the whole journey.

Total distance is 60 m and time 15 s, so the average speed is 4 m/s.

7. A walker travels at 1.5 m/s for 4 min. How far does the walker travel in kilometres?

4 min = 240 s. Distance = 360 m = 0.36 km.

8. A cyclist covers 600 m in 60 s, waits 30 s, then covers 300 m in 60 s. Find the whole-journey average speed.

Distance = 900 m and elapsed time = 150 s, giving 6 m/s.

9. A bus travels 30 km at 60 km/h and another 30 km at 30 km/h. Find the average speed for the full journey.

Times are 0.5 h and 1 h. Average speed = 60 km ÷ 1.5 h = 40 km/h.

10. A delivery robot must travel 360 m in 100 s. It covers the first 120 m in 40 s. What average speed must it maintain over the remaining distance?

240 m remain and the remaining time is 60 s. Required average speed is 4 m/s.