

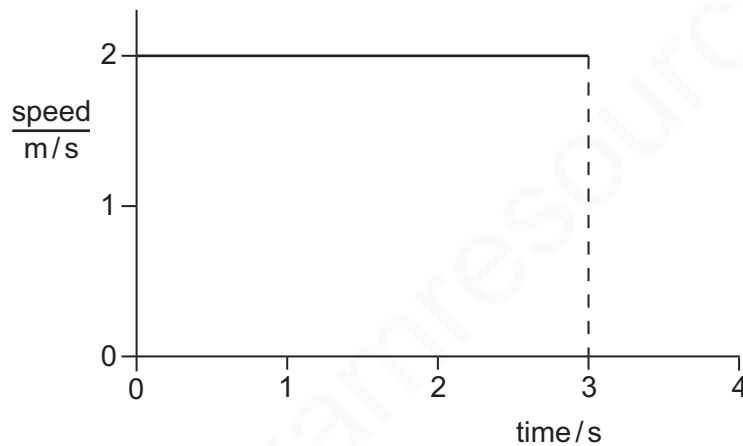
# 0654-P2-MOTION-SET-1-MS

**1** A tunnel has a length of 50 km. A car takes 20 min to travel between the two ends of the tunnel.

What is the average speed of the car?

- A 2.5 km/h
- B 16.6 km/h
- C 150 km/h
- D 1000 km/h

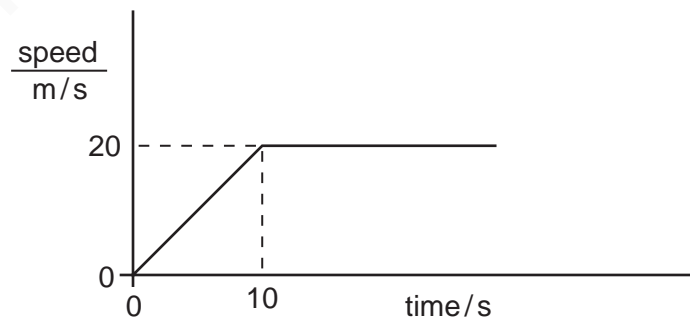
**2** The diagram shows the speed-time graph for an object moving at constant speed.



What is the distance travelled by the object in the first 3 s?

- A 1.5 m
- B 2.0 m
- C 3.0 m
- D 6.0 m

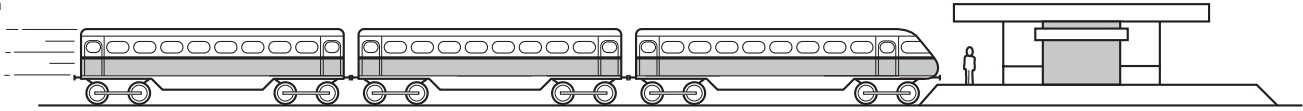
**3** A car accelerates from traffic lights. The graph shows how the car's speed changes with time.



How far does the car travel before it reaches a steady speed?

- A 10 m
- B 20 m
- C 100 m
- D 200 m

**4** A child is standing on the platform of a station, watching the trains.



A train travelling at 30 m/s takes 3 s to pass the child.

What is the length of the train?

- A 10m
- B 30m
- C 90m
- D 135m

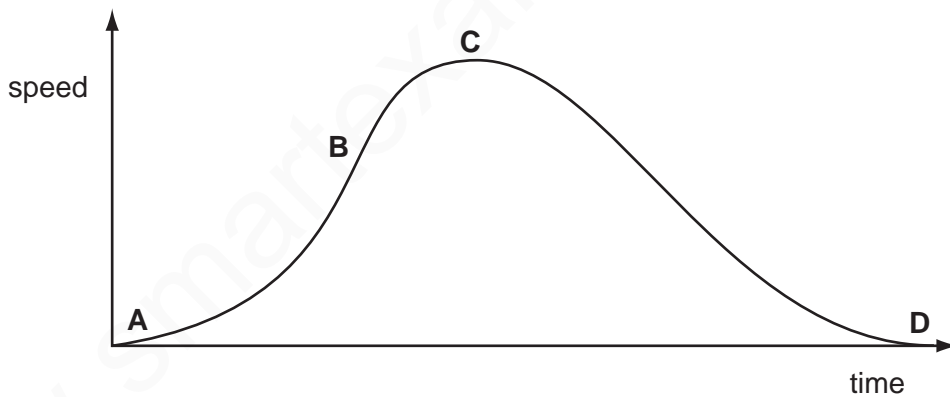
**5** A vehicle of mass 900 kg is travelling with a velocity of 20 m/s.

What is the momentum of the vehicle?

- A 45Ns
- B 450Ns
- C 18 000Ns
- D 180 000Ns

**6** The speed-time graph shown is for a bus travelling between stops.

Where on the graph is the acceleration of the bus the greatest?



The circuit of a motor racing track is 3 km in length. In a race, a car goes 25 times round the circuit in 30 minutes.

What is the average speed of the car?

- A 75 km/hour
- B 90 km/hour
- C 150 km/hour
- D 750 km/hour

**7** A car travels 100 km. The highest speed of the car is 90 km/h, and the lowest speed is 30 km/h. The journey takes two hours.  
What is the average speed for the journey?

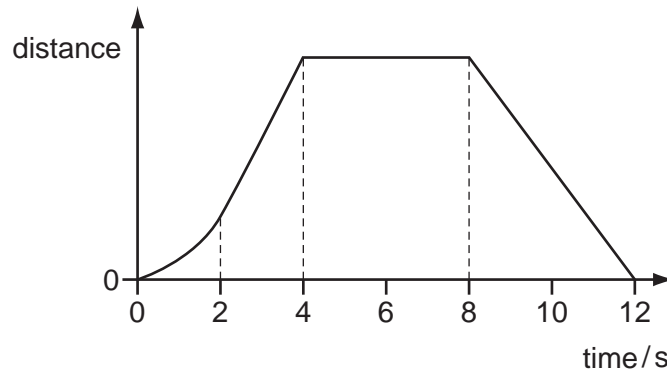
- A** 30 km/h      **B** 50 km/h      **C** 60 km/h      **D** 90 km/h

The winner of a 1500 m race takes 4 minutes to run the race.

**8** What is his average speed in m/s?

- A**  $1500 \times \frac{60}{4}$
- B**  $1500 \times 4 \times 60$
- C**  $\frac{1500}{4 \times 60}$
- D**  $\frac{1500 \times 4}{60}$

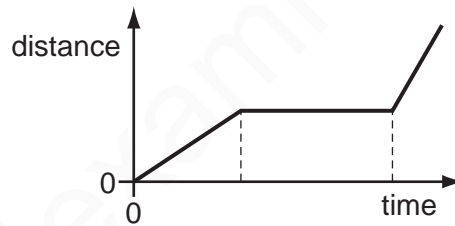
**9** The graph shows how the distance of an object changes with time.



Between which two times is the object moving with a changing speed?

- A** between 0 s and 2 s
- B** between 2 s and 4 s
- C** between 4 s and 8 s
- D** between 8 s and 12 s

**10** The diagram shows a distance/time graph for a journey.



Which is the speed/time graph for this journey?

