

5 What is the definition of acceleration?

- A the rate of change of displacement
- B the rate of change of kinetic energy
- C the rate of change of momentum
- D the rate of change of velocity

A-Level Physics: s24 12

4 Which statement is **not** correct?

- A Acceleration can be determined from the gradient of a velocity–time graph.
- B Acceleration is the rate of change of velocity.
- C Displacement can be determined from the area under a velocity–time graph.
- D Velocity is the rate of change of distance.

A-Level Physics: s23 11

5 One object moves directly from P to R.

R
•P
•Q
•

In a shorter time, a second object moves from P to Q to R.

Which statement about the two objects is correct for the journey from P to R?

- A They have the same average speed.
- B They have the same average velocity.
- C They have the same displacement.
- D They travel the same distance.

8 An aircraft flies from London to Sydney in a time of 21 hours 40 minutes.

The distance travelled is 17 000 km.

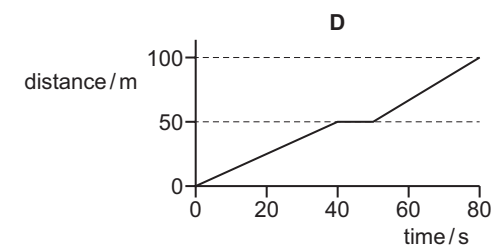
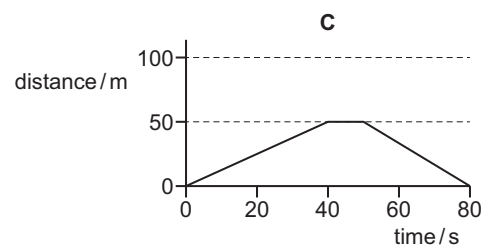
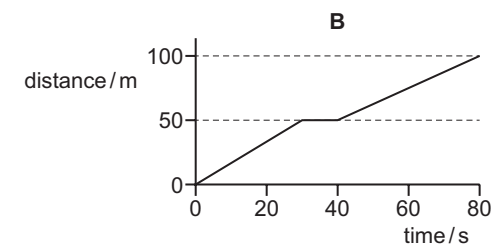
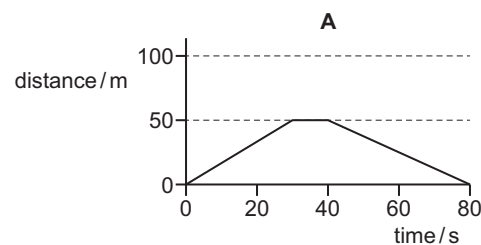
What is the average speed of the aircraft?

- A 2.2 ms^{-1}
- B $2.2 \times 10^7 \mu\text{ms}^{-1}$
- C $2.2 \times 10^{11} \text{ nm s}^{-1}$
- D $2.2 \times 10^6 \text{ mms}^{-1}$

A-Level Physics: w23 13

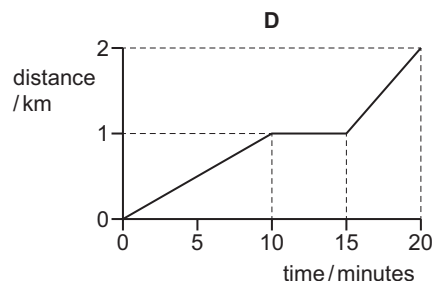
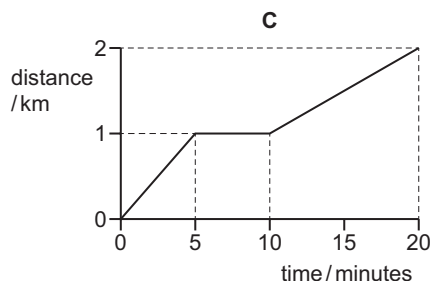
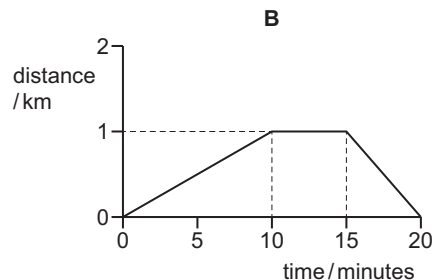
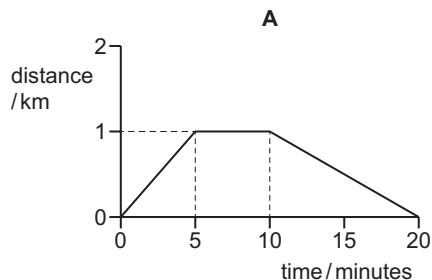
5 A student walks at a constant speed for a distance of 50 m in a time of 40 s. The student rests for a time of 10 s and then walks back to the starting point at a constant speed in a time of 30 s.

What is the distance–time graph for the motion of the student?



- 5 A student cycles uphill from home to a shop, taking 10 minutes. The student then spends 5 minutes in the shop before cycling home downhill at twice the initial speed.

Which graph could show the variation with time of the distance travelled by the student?



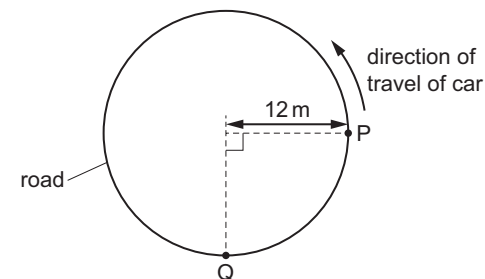
- 6 A person, travelling on a motorway a total distance of 200 km, travels the first 90 km at an average speed of 80 km h^{-1} .

Which average speed must be obtained for the rest of the journey if the person is to reach the destination in a total time of 2 hours 0 minutes?

- A** 110 km h^{-1} **B** 120 km h^{-1} **C** 122 km h^{-1} **D** 126 km h^{-1}

- 5 A car travels anticlockwise along a horizontal circular road of radius 12 m, as shown.

The car takes a time of 4.0 s to move from position P to position Q.



What is the magnitude of the average velocity of the car for the journey from P to Q?

- A** 4.2 ms^{-1} **B** 4.7 ms^{-1} **C** 6.0 ms^{-1} **D** 14 ms^{-1}