

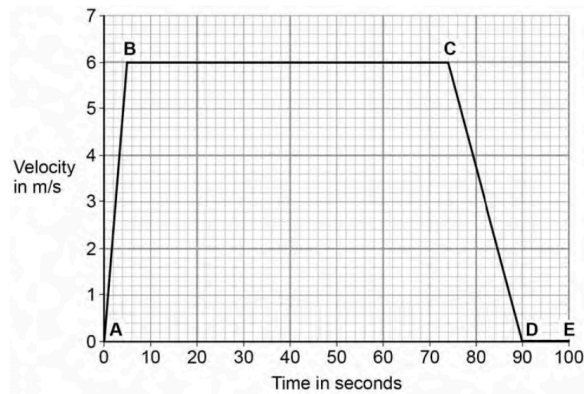
Q1. (2018)

a)

0 1 . 2 A woman cycled along a straight flat road.

Figure 1 shows how the woman's velocity changed with time.

Figure 1



Which part of the graph shows the woman moving at constant velocity?

[1 mark]

Tick **one** box.

BC

☐

CD

☐

DE

☐

b)

0 1 . 3 Which part of the graph shows the woman stationary?

[1 mark]

Tick **one** box.

BC

☐

CD

☐

DE

☐

Q3. (2018)

0 1 . 7 Estimate how a typical cycling speed of 6 m/s compares with a typical walking speed.

[1 mark]

Tick **one** box.

about twice as fast

☐

about four times faster

☐

about eight times faster

☐

Q4. (2019)

0 3

Figure 4 shows two children playing table tennis.

The boy hits the ball from one end of the table.

Figure 4



0 3 . 2

The ball has an average speed of 11 m/s

The ball takes 0.25 s to travel the same distance as the length of the table.

Calculate the length of the table.

Use the equation:

$$\text{distance travelled} = \text{speed} \times \text{time}$$

[2 marks]

Q5. (2020)

0 1

Figure 1 shows a girl bowling a ball along a ten-pin bowling lane.

Figure 1



The girl is trying to knock down the ten pins at the end of the bowling lane.

As the ball travels along the lane the velocity of the ball decreases.

0 1 . 3

The ball travels along the lane at an average speed of 4.5 m/s

It takes the ball 4.0 seconds to travel the length of the lane.

Calculate the length of the lane.

Use the equation:

$$\text{distance travelled} = \text{speed} \times \text{time}$$

[2 marks]

Q6. (2021)

0 5

Scientists are developing a rocket aeroplane designed to travel much faster than jet aeroplanes.

- 0 5 . 3** During the first 14 seconds the average speed of the rocket aeroplane on the runway will be 35 m/s.

Calculate the distance that the rocket aeroplane will travel during the first 14 seconds.

Use the equation:

$$\text{distance travelled} = \text{average speed} \times \text{time}$$

[2 marks]

Q7. (2022)

- 0 7** **Figure 10** shows competitors in the wheelchair race at the London Marathon.

The distance of the London Marathon is 42 000 m

Figure 10



Use the Physics Equations Sheet to answer questions **07.3** and **07.4**.

a)

- 0 7 . 3** Which equation links distance travelled, speed and time?

[1 mark]

Tick (✓) **one** box.

distance travelled = speed × time

☐

time = distance travelled × speed

☐

speed = distance travelled × time

☐

b)

- 0 7 . 4** The distance of the London Marathon is 42 000 m

The winning time for the race was 5600 seconds.

Calculate the average speed of the winner of the race.

[3 marks]

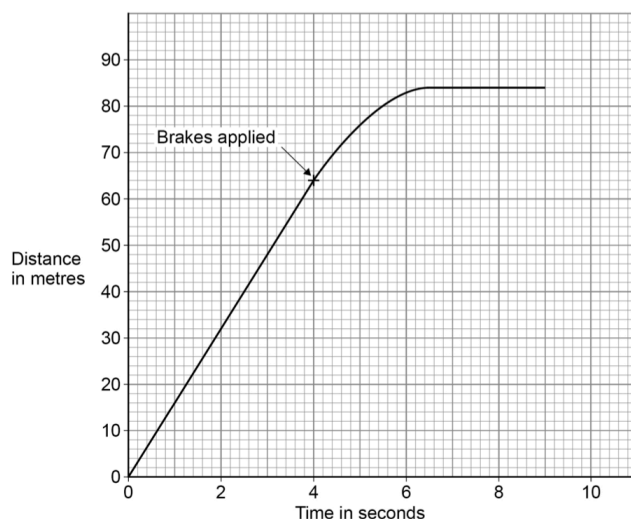
Q8. (2023)

0 2

A car contains a device called a black box. The black box records the distance travelled and the time taken for each journey.

Figure 3 shows the distance–time graph for part of a journey.

Figure 3



a)

0 2 . 2

After 4 seconds the driver applied the brakes and the car slowed down and stopped.

The distance the car travelled after the brakes were applied is called the braking distance.

Determine the braking distance of the car.

Use Figure 3.

[2 marks]

b)

The black box also records the deceleration of the car.

0 2 . 3

As the car decelerates, the velocity of the car changes by 16 m/s.

The car decelerates for 2.5 seconds.

Calculate the deceleration of the car.

Use the equation:

$$\text{deceleration} = \frac{\text{change in velocity}}{\text{time taken}}$$

[2 marks]

Q9. (2024)

0 1

Figure 1 shows a skydiver jumping from an aeroplane.

The skydiver is accelerating downwards.

Figure 1

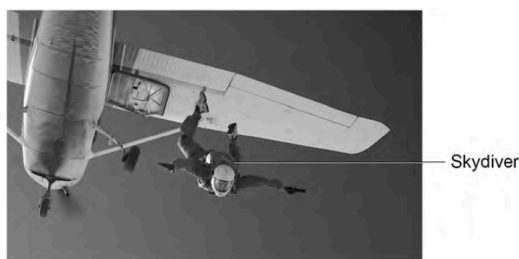
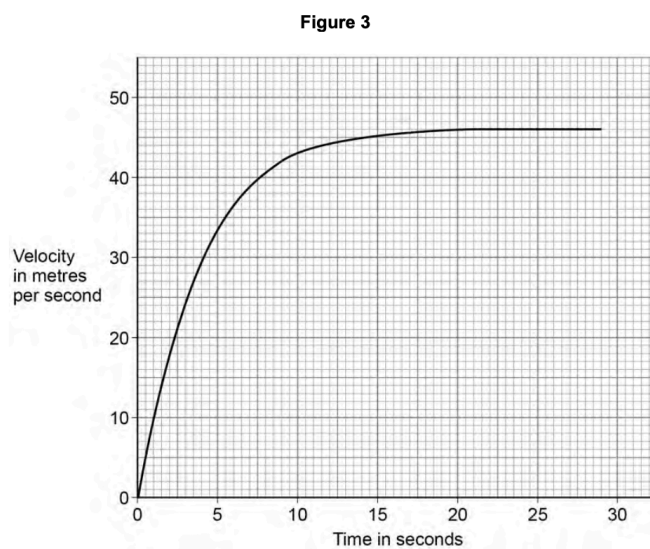


Figure 2 shows the two forces acting on the skydiver a few seconds after jumping from the aeroplane.



Figure 3 shows a velocity–time graph for the skydiver.



- 0 1 . 8** After opening a parachute, the skydiver fell at a constant speed of 3.6 m/s for 25 seconds.

Calculate the distance travelled by the skydiver during this time.

Use the equation:

$$\text{distance travelled} = \text{speed} \times \text{time}$$

[2 marks]