

PHYSICS
MADE SIMPLE
PRIVATE TUITION SERVICES

Forces and Motion 1

Score: ___ %

Topics I found easy:

Topics I still need to work on:

Definitions and units.

State the units for the following measurements.

Distance is measured in _____.

Time is measured in _____.

Speed is measured in _____.

State the equation linking speed, distance, and time.

Example:

A car travels 400m in 10s. How fast is it travelling?

speed = ?

distance = 400m

time = 10s

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{Speed} = \frac{400}{10} = 40\text{m/s}$$

Questions

1. A car travels 360m in 40s. How fast is it travelling?

_____ m/s

2. A woman walks 1.5km to the café to meet her girlfriend. It takes her 10minutes to get there. How fast did they walk?

_____ m/s

3. A ball is rolling along the table. It rolls 20cm in 0.8s. Calculate the speed the of the ball.

_____m/s

4. Scarlett is driving along the motorway. She travels 3km in 2minutes. Calculate Scarlett's Speed.

_____m/s

5. A car travels 3km at 4m/s. How long does it take for the journey?

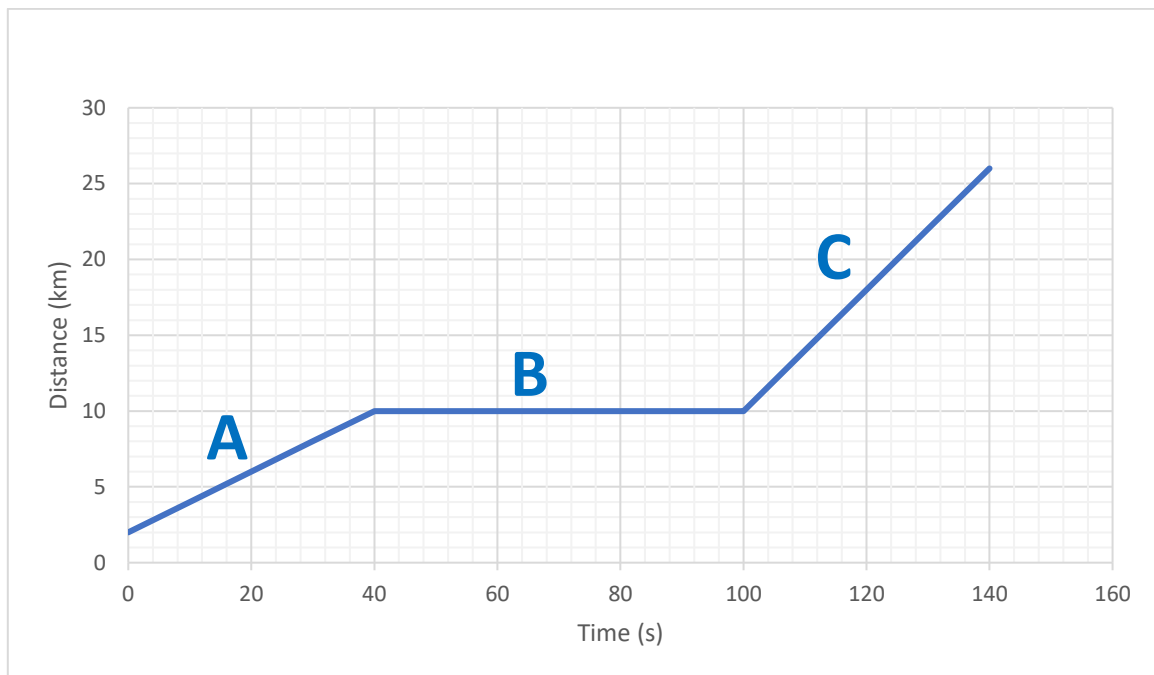
_____s

6. Sarah walks into town at 2km/h. How long would it take her to complete the 3000m journey?

_____s

Distance-time Graphs

1. On a distance time graph the x- axes (the one along the bottom) is _____.
2. The y axes is _____.



3. How far did the car travel during section A? _____ m
4. How far did the car travel during section B? _____ m
5. How far did the car travel during section C? _____ m
6. Line A shows the car is travelling at a _____ speed. Calculate the speed of the car during section A.

speed (m/s) = ?

distance (m) =

time (s) =

_____ m/s

7. The horizontal line (B) shows that the car is stationary. How long was the car stationary for?

_____ s

8. Line C shows the car travelling at constant speed. Calculate the speed of the car during section C.

speed =?

distance =

time =

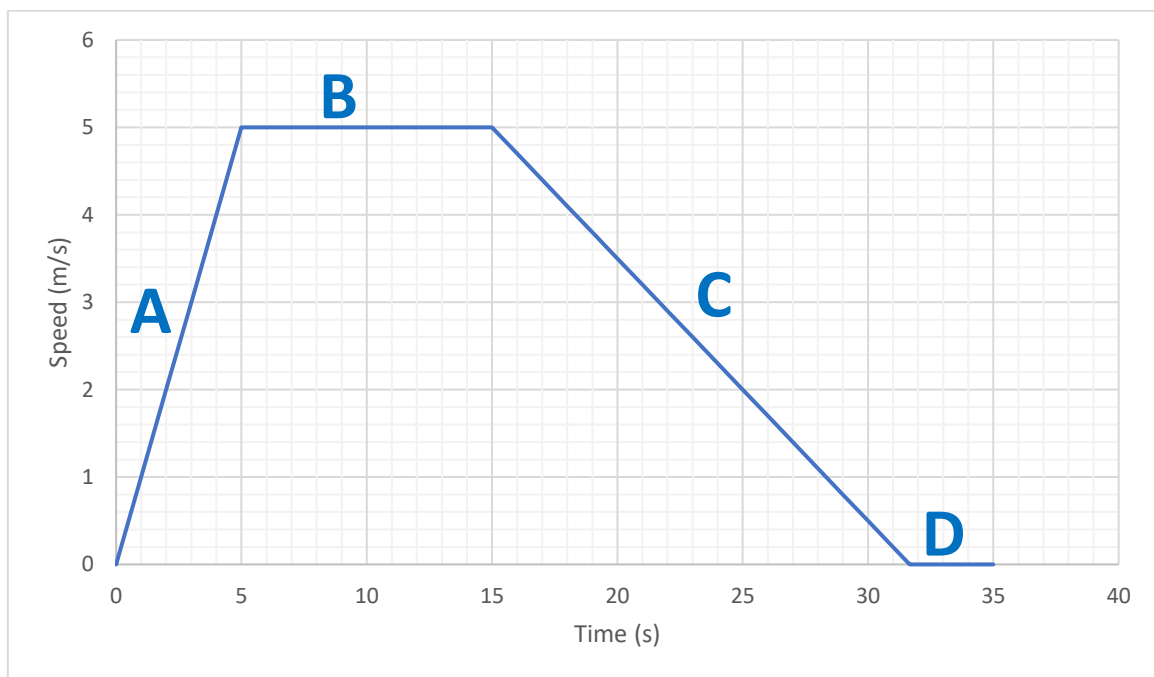
_____ m/s

9. The steeper the line on a distance-time graph, the _____ the object travels.

Velocity-time Graph

10. On a velocity-time graph, _____ is on the x axes.

11. On a velocity-time graph, _____ is on the y axes.



12. Describe the motion of the object at each stage.

A: _____

B: _____

C: _____

D: _____

13. State the equation linking change in velocity, time and acceleration.

Example:

A car accelerates from rest to $5m/s$ in $2s$. Calculate the acceleration.

$$a = \frac{\text{change in velocity}}{\text{time}}$$

$$a = \frac{5 - 0}{2} = 2.5m/s^2$$

Questions

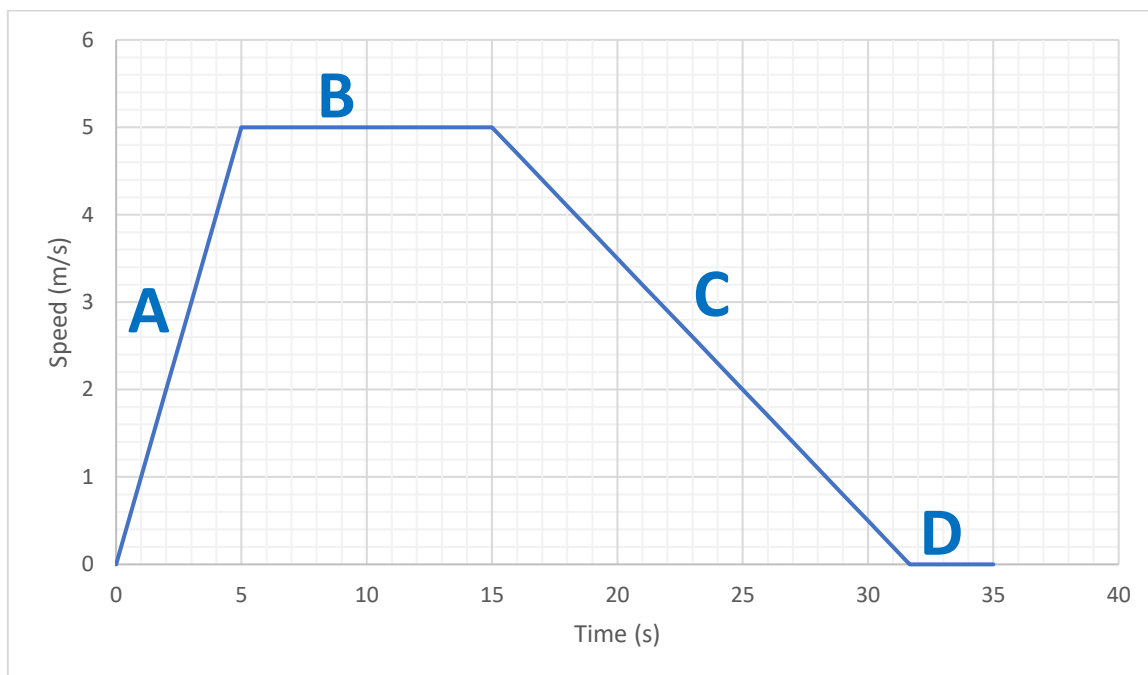
14. A truck accelerates from $0m/s$ to $10m/s$ in $4s$. Calculate the acceleration and give the unit.

_____ Unit: _____

15. Florence Griffith-Joyner accelerates from rest up to her top speed of $10.5m/s$ in $0.8s$. Calculate her acceleration.

_____ Unit: _____

16. Calculate the acceleration during section A.



Acceleration = _____ m/s²

The area underneath the graph represents the distance travelled. Calculate the distance travelled by the object in the graph above.

Distance travelled = _____ m

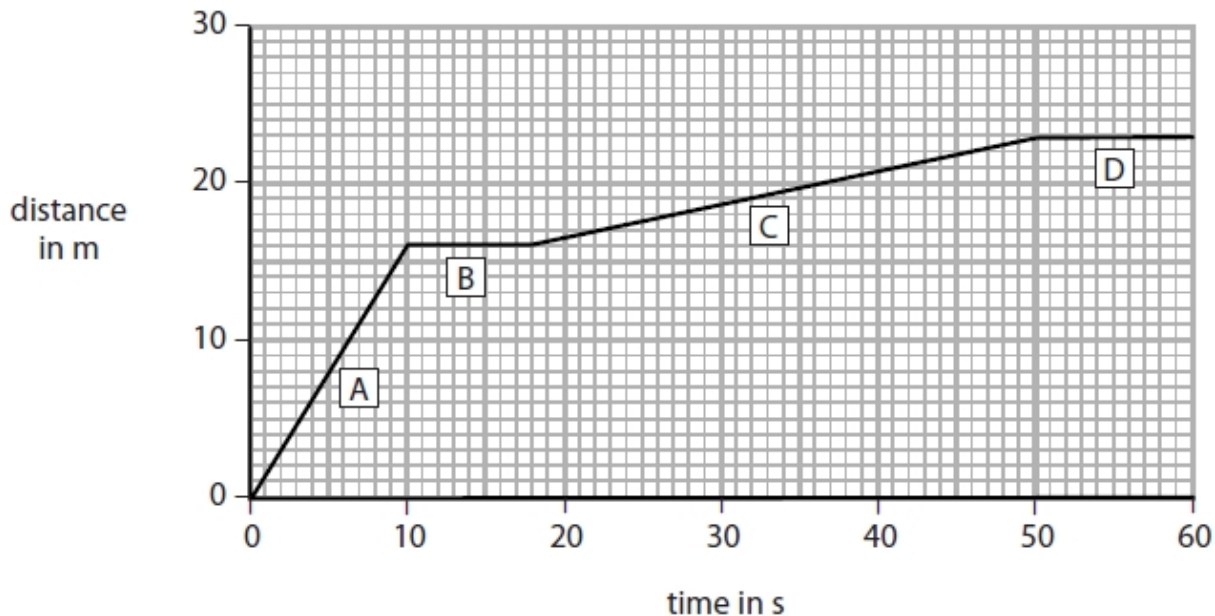
Exam questions

Q1.

This question is about a small flying insect called a bee.

(a) The graph shows a 60-second journey made by the bee.

During this time, the bee stops at some flowers to feed.



(i) Which stage of the graph shows the bee stopping at a flower for the shortest period of time?

(1)

A B C D

(ii) Which stage of the graph shows the bee moving at the fastest speed?

(1)

A B C D

(iii) State the equation linking average speed, distance moved and time taken.

(1)

(iv) Calculate the average speed of the bee during the first 35 seconds of its journey.

(2)

average speed = m/s

Q2.

A train travels 9000 m from station A to station B.

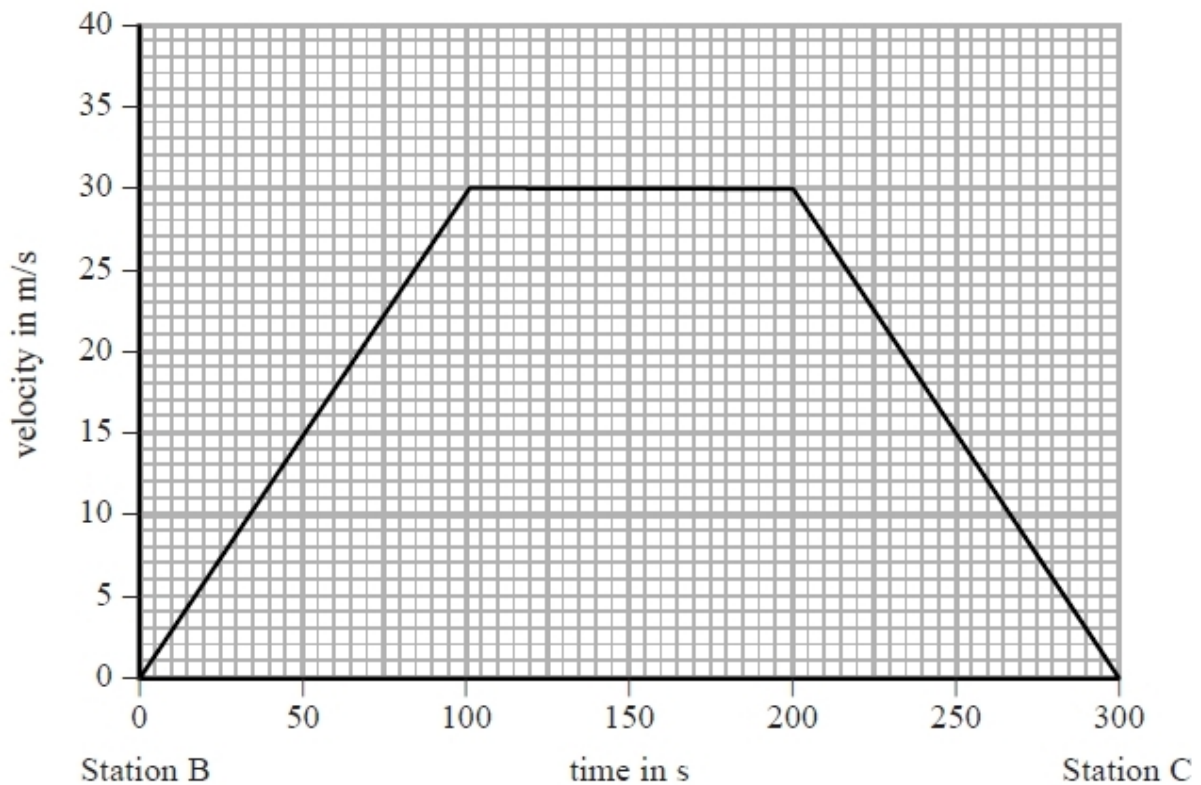
It takes 900 seconds.

(a) (i) State the equation linking average speed, distance moved and time taken. (1)

(ii) Calculate the average speed of the train and give its unit. (2)

Average speed = unit

(b) The train continues along a straight track from station B to station C.
The graph shows how the velocity of the train changes with time during this part of the journey.



(i) Use the graph to calculate the acceleration of the train, in m/s^2 , during the first 100 seconds after it leaves station B. (3)

Acceleration = m/s^2

(ii) Use the graph to calculate the distance, in m, between station B and station C.

(3)

Distance = m

(Total for question = 12 marks)

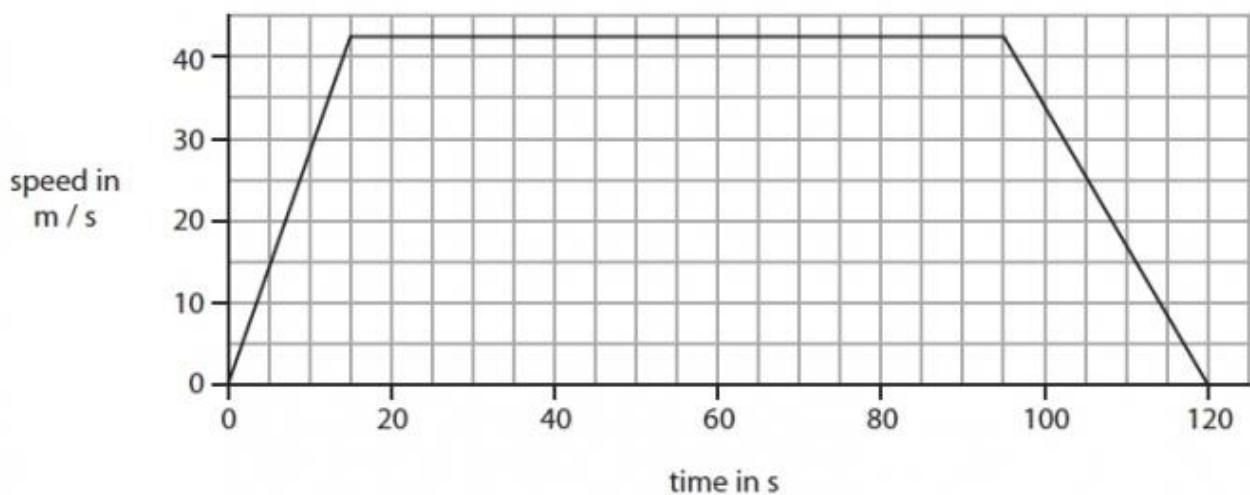
Q3.

An aeroplane takes two minutes to travel the short distance between airports on two islands.



The graph shows how the speed of the aeroplane changes as it

- takes off
- flies across the sea
- lands on the other island.
- When it is flying across the sea, the aeroplane travels at a constant speed.



(a) Use the graph to answer the following questions.

(i) State the value of the constant speed.

(1)

speed m/s

(ii) Calculate the acceleration of the aeroplane at the start of the journey and give the unit.

(3)

acceleration = unit

(iii) Calculate the total distance that the aeroplane travels.

(3)

distance = m

END OF QUESTIONS