

Distance-Time and Speed-Time Graphs

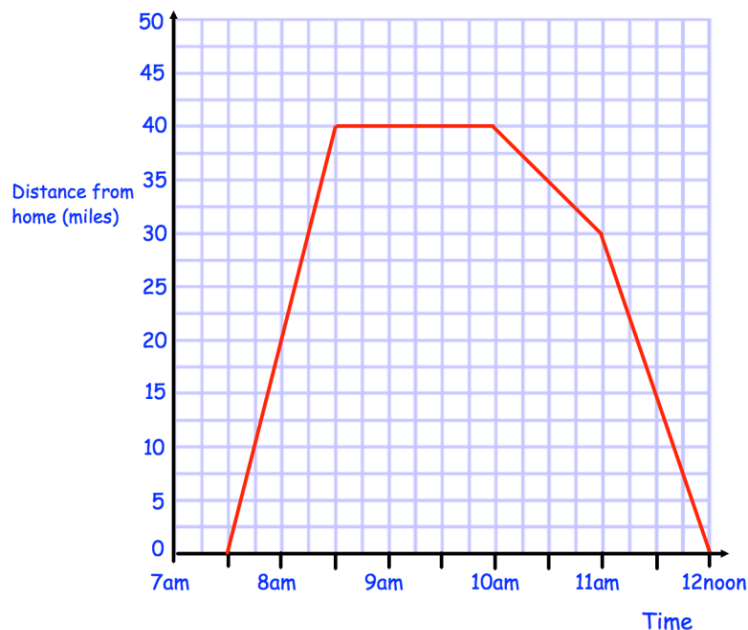
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Worked example

Study the distance-time graph below.

How far was the person from home at 8.30am?

- a) How long did the person stop for?
- b) How far did the person travel in total?



Questions used with permission from Corbettmaths: <https://corbettmaths.com/>

Your turn

Study the distance-time graph below

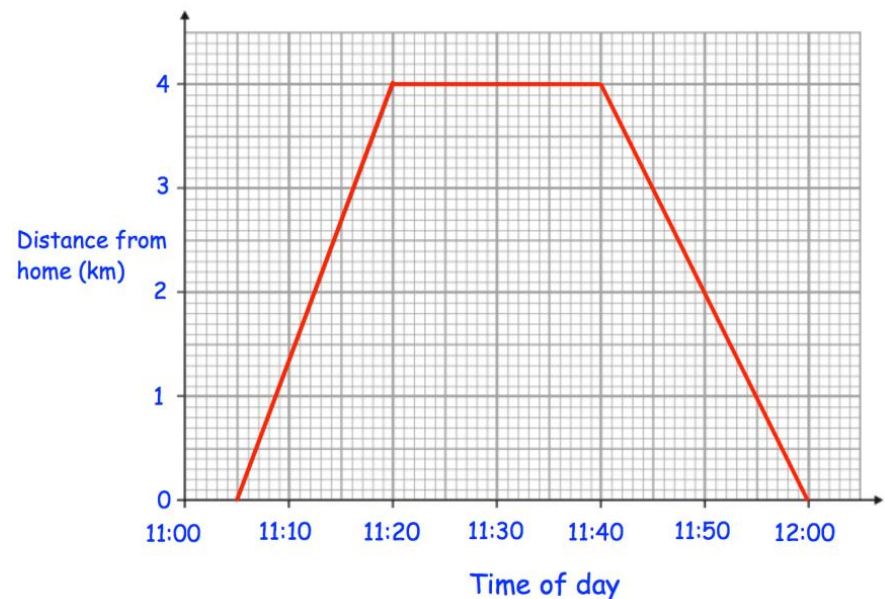
How far was the person from home at 11.20?

4 km

- a) How long did the person stop for?
- b) How far did the person travel in total?

20 minutes

8 km

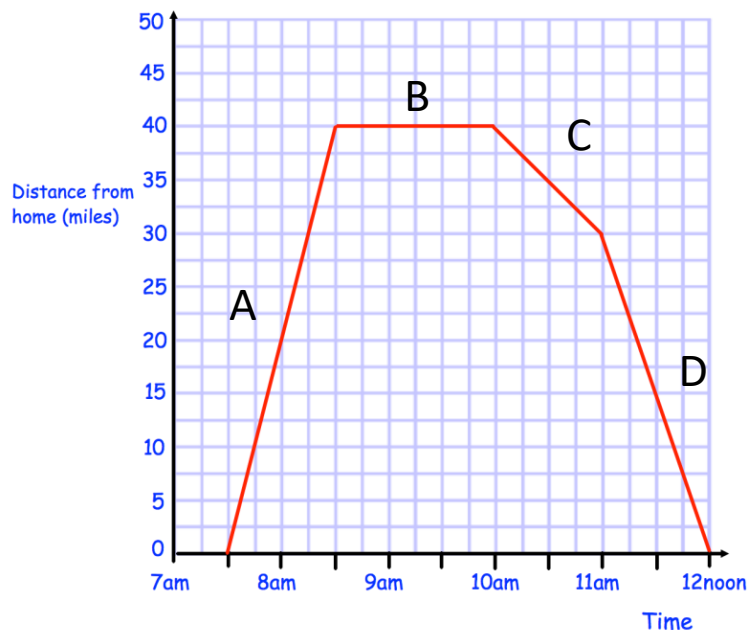


Worked example

Study the distance-time graph below.

What was the person's speed in each section of the journey:

A
B
C
D



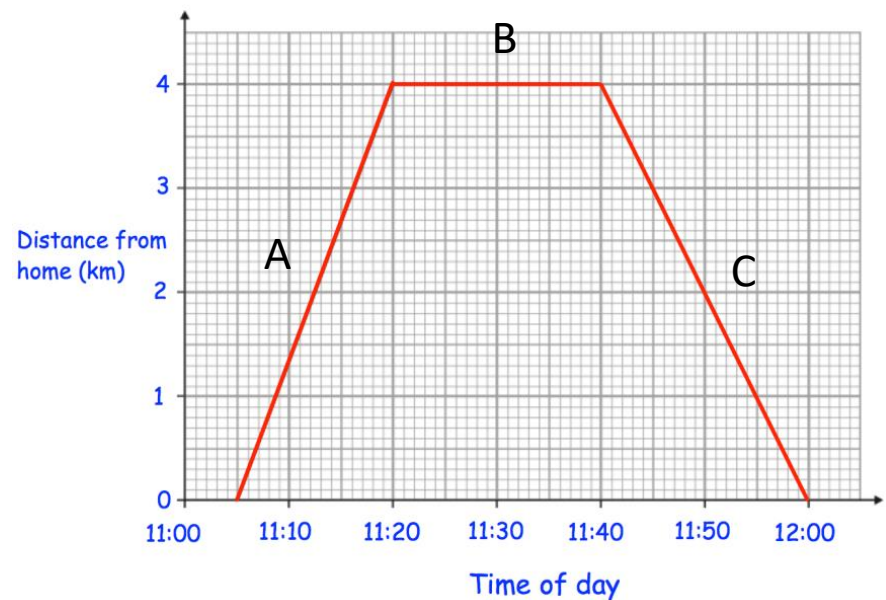
Your turn

Study the distance-time graph below.

What was the person's speed in each section of the journey:

A
B
C

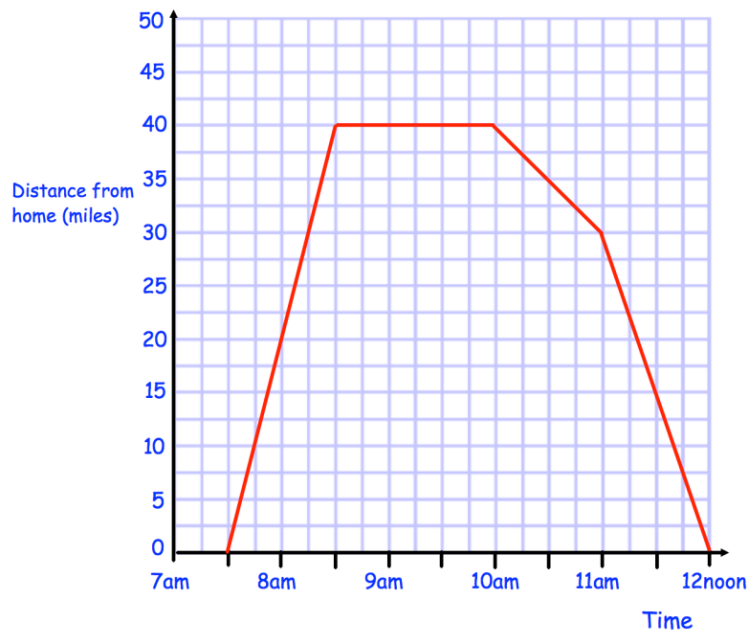
16 km/h
0 km/h
12 km/h



Worked example

Study the distance-time graph below.

What was the person's average speed for the whole journey?

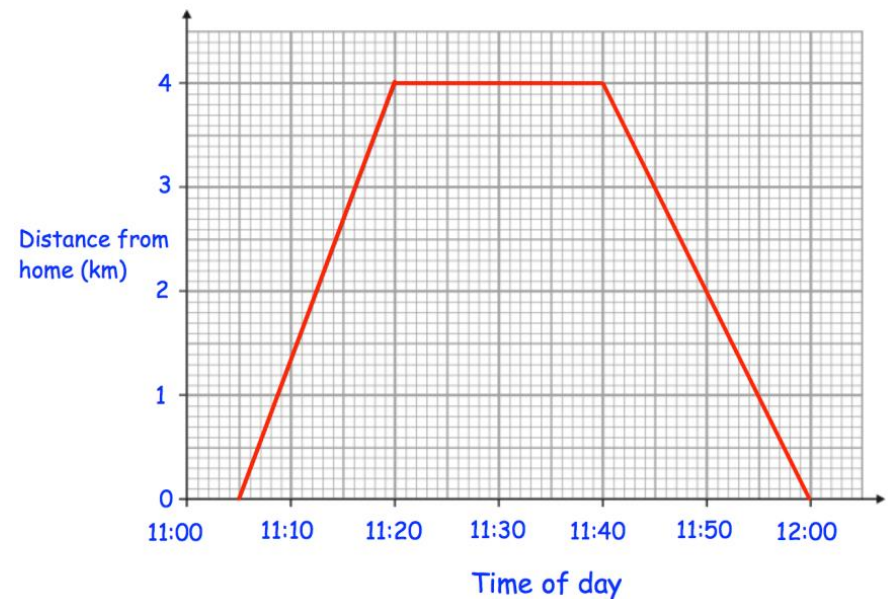


Your turn

Study the distance-time graph below.

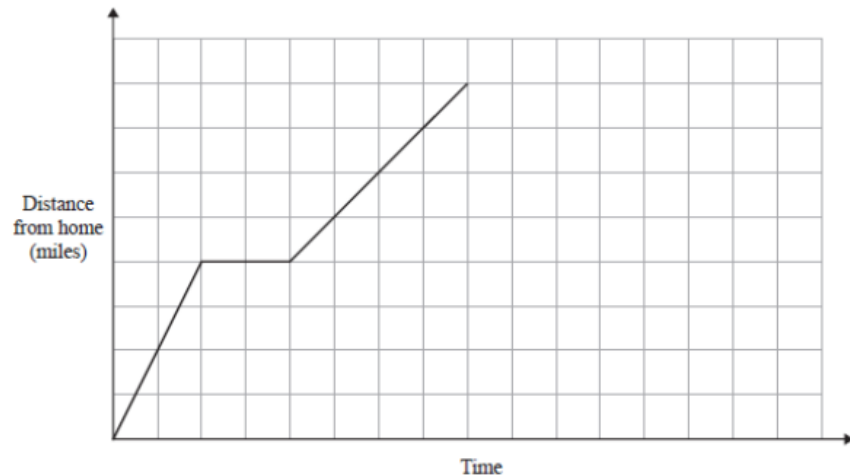
What was the person's average speed for the whole journey?

8.72 km/h



Worked example

A person leaves home at 13:00.
She drives for 1 hour at a constant speed of 20 *mph*.
She then stops for a break.
She then drives to the hospital at a constant speed.
She then is at the hospital for 90 minutes.
She then drives home at a constant speed of 48 *mph*.
What time does she arrive home?



Your turn

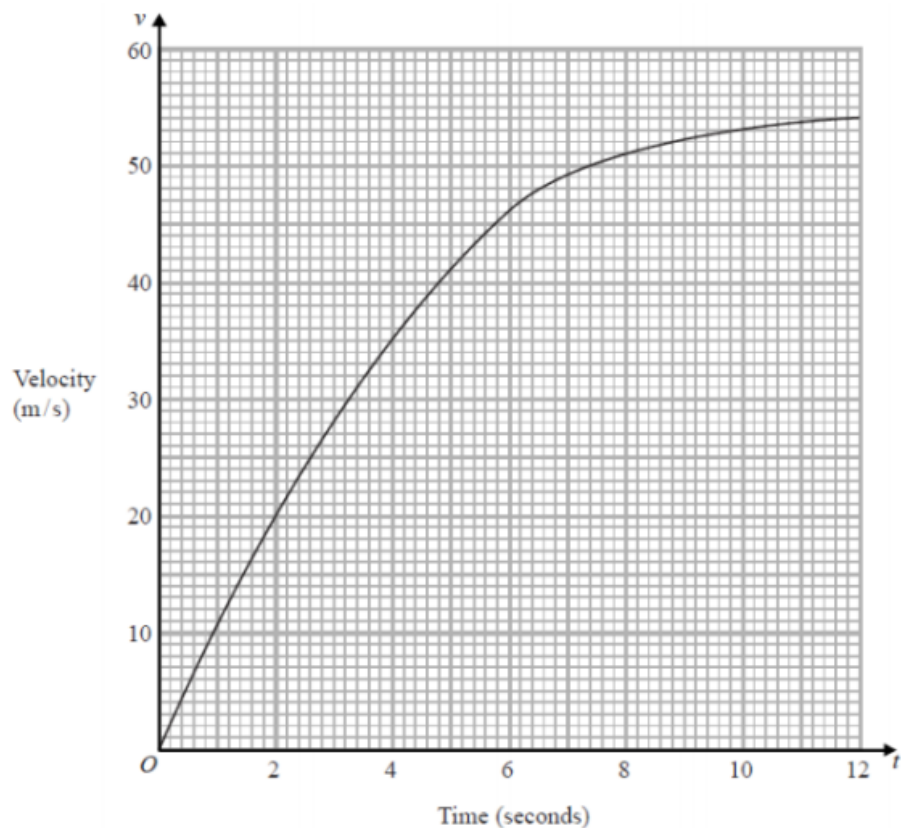
A person leaves home at 13:00.
She drives for 30 minutes at a constant speed of 40 *mph*.
She then stops for a break.
She then drives to the hospital at a constant speed.
She then is at the hospital for 60 minutes.
She then drives home at a constant speed of 32 *mph*.
What time does she arrive home?

16:45

Worked example

The graph shows the velocity, v m/s, of a parachutist t seconds after leaving a plane.

Calculate an estimate for the acceleration of the parachutist at $t = 6$

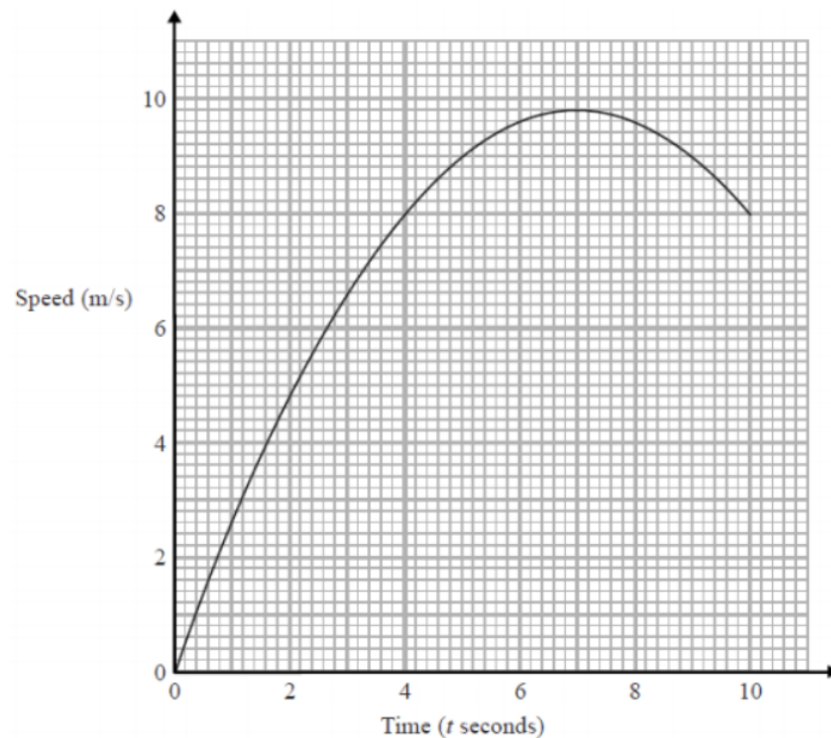


Your turn

The graph shows the speed, m/s, of a runner, t seconds after the start of a race.

Calculate an estimate for the acceleration of the runner at $t = 4$

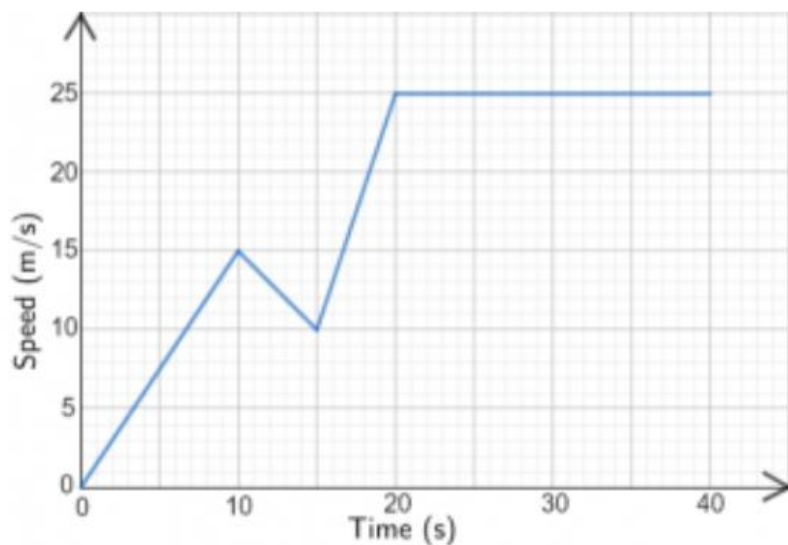
Any value between 1 and 1.3 m/s²



Worked example

Below is the speed-time graph of 40-second cycle journey.

Work out the total distance travelled by the cyclist over the journey.

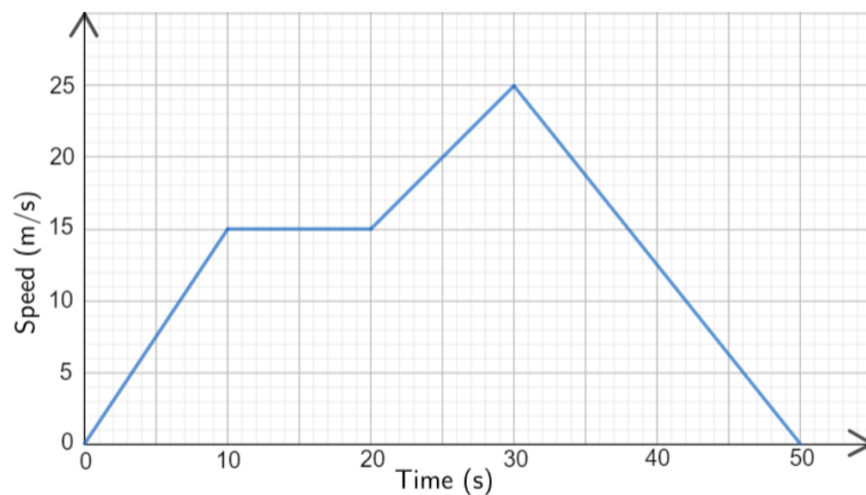


Your turn

Below is the speed-time graph of a 50-second car journey.

Work out the total distance travelled by the car over the journey.

675 m

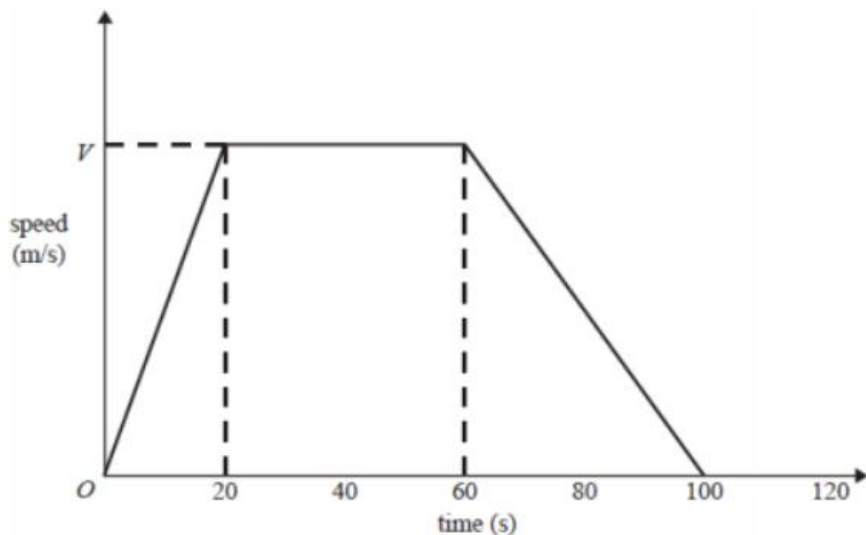


Worked example

Below is a speed-time graph for a car journey.

The car travelled 3500 *m* in 100 seconds.

Calculate the value of V



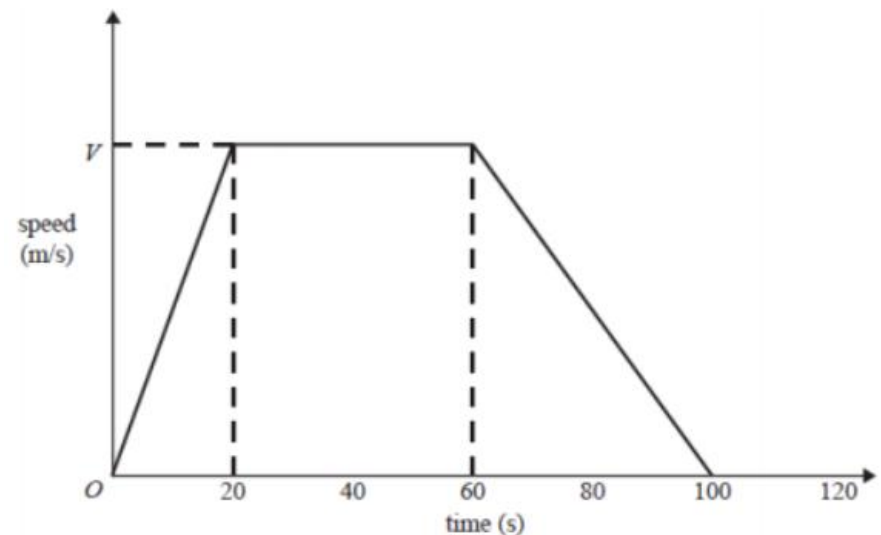
Your turn

Below is a speed-time graph for a car journey.

The car travelled 1750 *m* in 100 seconds.

Calculate the value of V

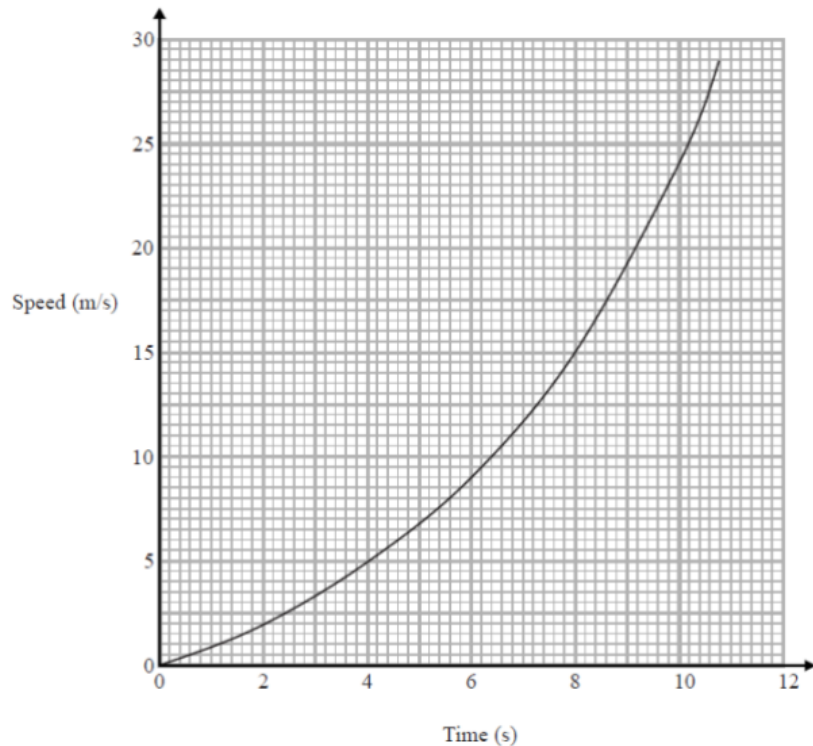
$$V = 25$$



Worked example

Below is a speed-time graph showing the speed, in metres per second, of an object t seconds after it started to move.

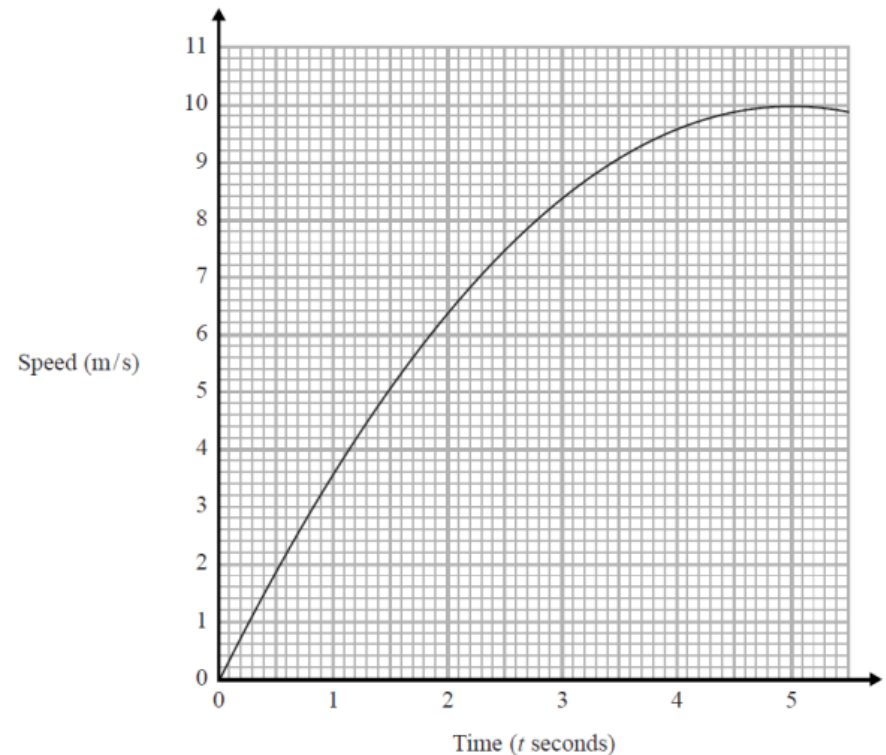
Use 5 strips of equal width to find an estimate for the distance travelled in the first 10 seconds



Your turn

Below is a speed-time graph showing the speed, in metres per second, of an object t seconds after it started to move.

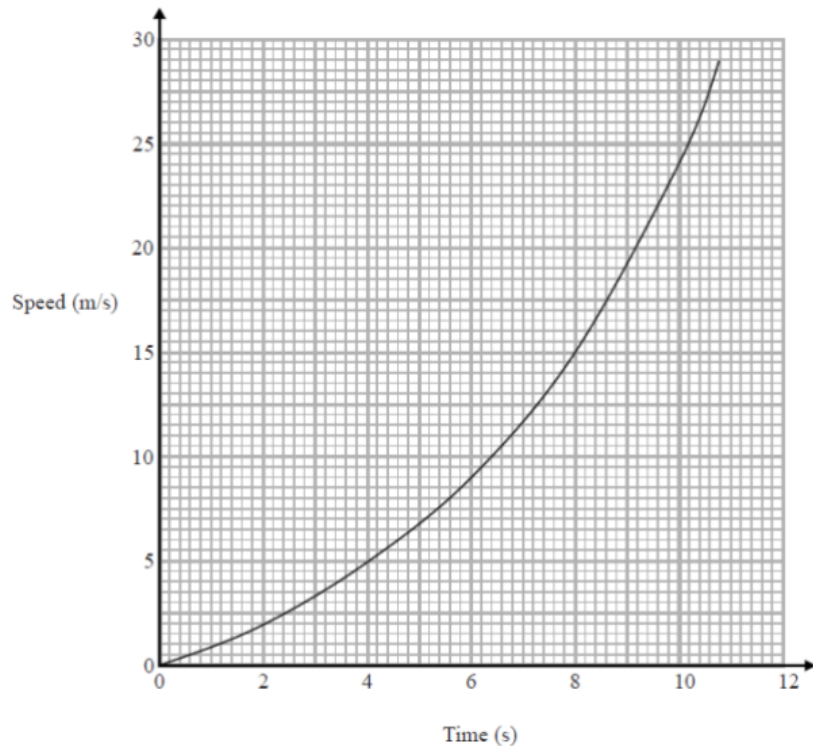
Use 3 strips of equal width to find an estimate for the distance travelled between $t = 1$ and $t = 4$ **21.4 m**



Worked example

Below is a speed-time graph showing the speed, in metres per second, of an object t seconds after it started to move.

Is your estimate an overestimate or underestimate?



Your turn

Below is a speed-time graph showing the speed, in metres per second, of an object t seconds after it started to move.

Is your estimate an overestimate or underestimate?

Underestimate

