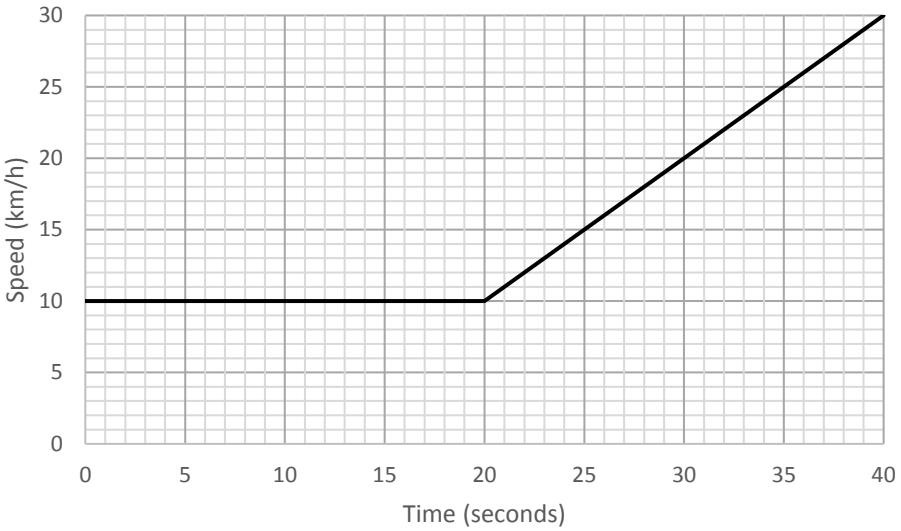
VELOCITY-TIME GRAPHS – PRACTICE QUESTIONS

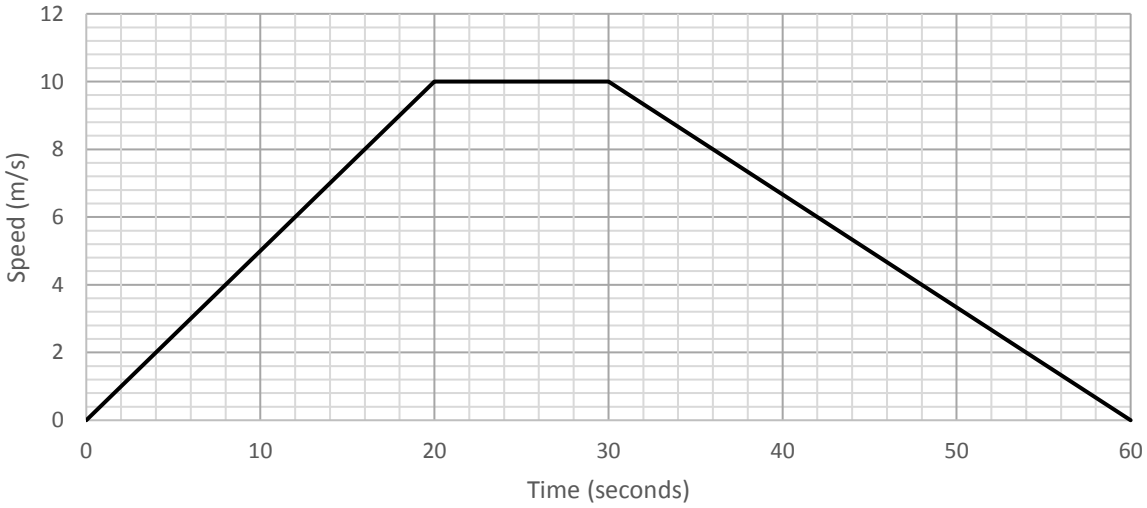
1.
The velocity-time graph below shows the journey of a car.



(a) Use the graph to estimate the speed of the car after 30 seconds.

(b) Use the graph to find the acceleration of the car between 20 and 40 seconds.

2.
The velocity-time graph below shows the run of a sprinter.



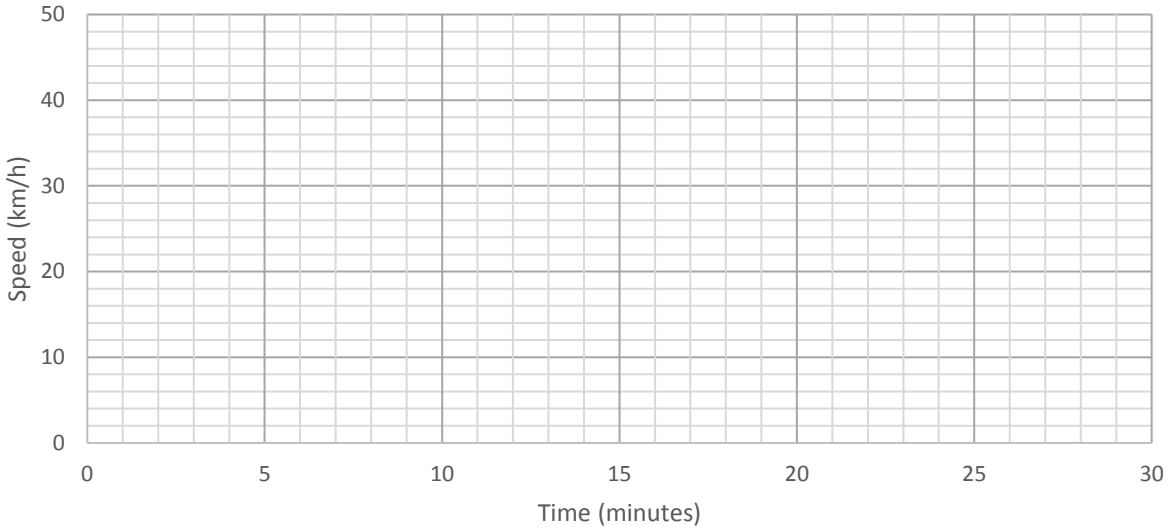
(a) Use the graph to find the sprinter's acceleration between 0 and 20 seconds.

(b) Use the graph to estimate the sprinter's speed after 8 seconds.

(c) During which period was the sprinter's speed constant?

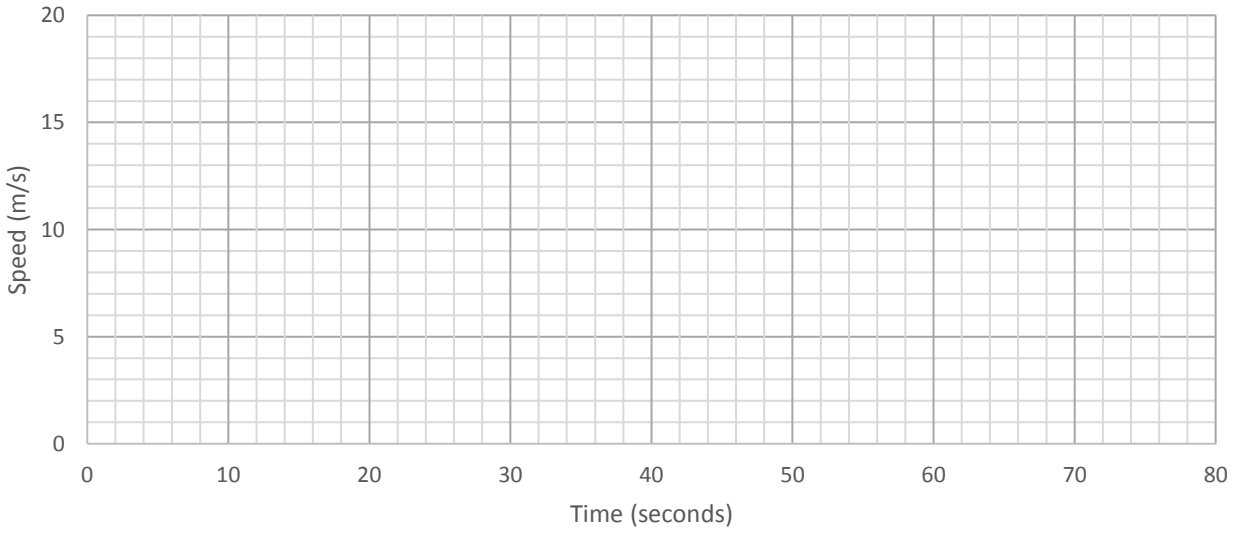
3.
A train travelled from Bristol to Bath.
The train started from rest, and accelerated for 3 minutes to a speed of 46 km/h.
The train then stayed at 46 km/h for 20 minutes.
The train then decelerated for 4 minutes and came to a stop.

Use the information to draw a velocity-time graph on the axis below.
Assume all accelerations and decelerations are linear.

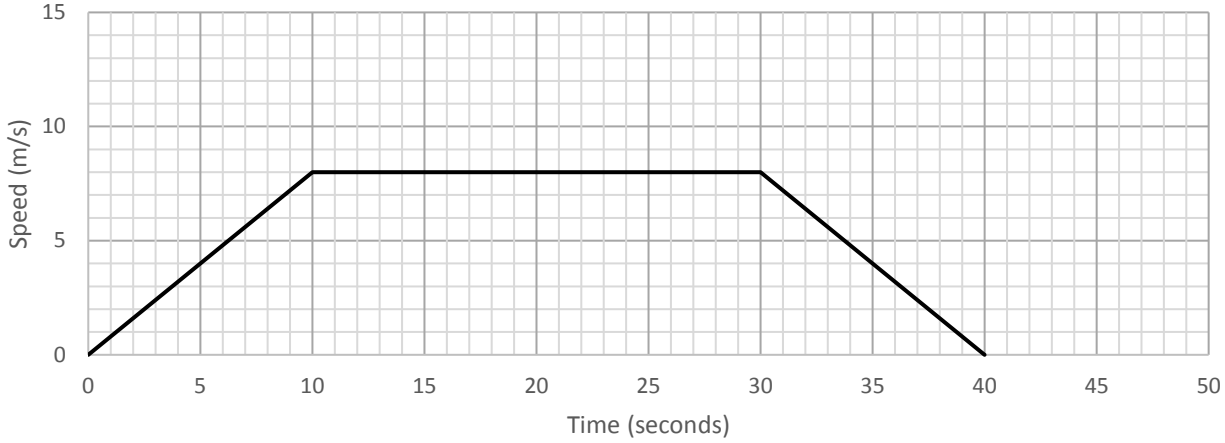


4.
Alice went for a bike ride.
She started from rest and accelerated for 8 seconds to a speed of 11 metres per second.
She then stayed at 11 metres per second for a further 16 seconds.
She then accelerated again for 6 seconds to a speed of 14 metres per second.
She then stayed at 14 metres per second for a further 18 seconds.
She then decelerated, coming to a stop after 12 seconds.

Use the information to draw a velocity-time graph on the axis below.
Assume all accelerations and decelerations are linear.



5.
The velocity-time graph below shows the run of a sprinter.

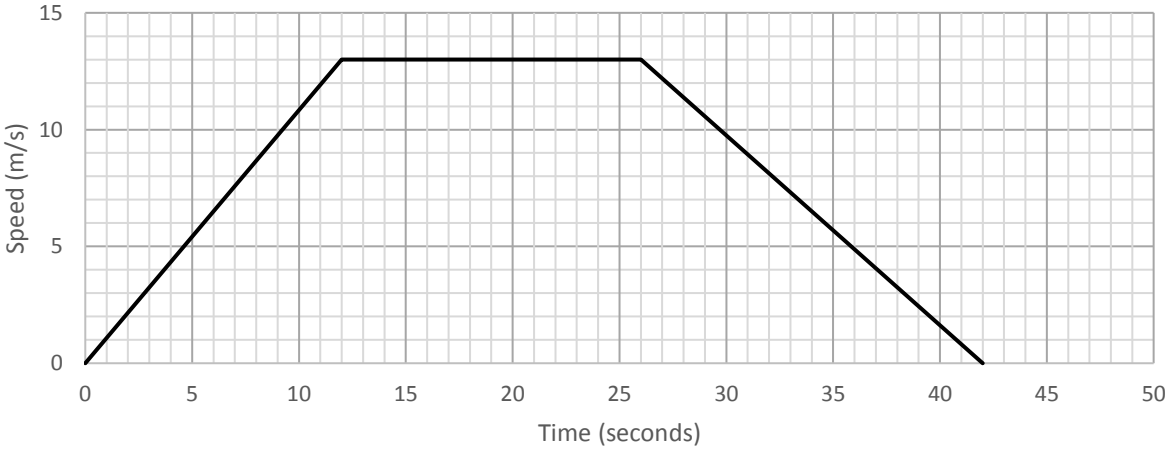


(a) What was the sprinter's maximum speed?

(b) Use the graph to find the sprinter's acceleration between 0 and 10 seconds.

(c) How many metres did the sprinter run?

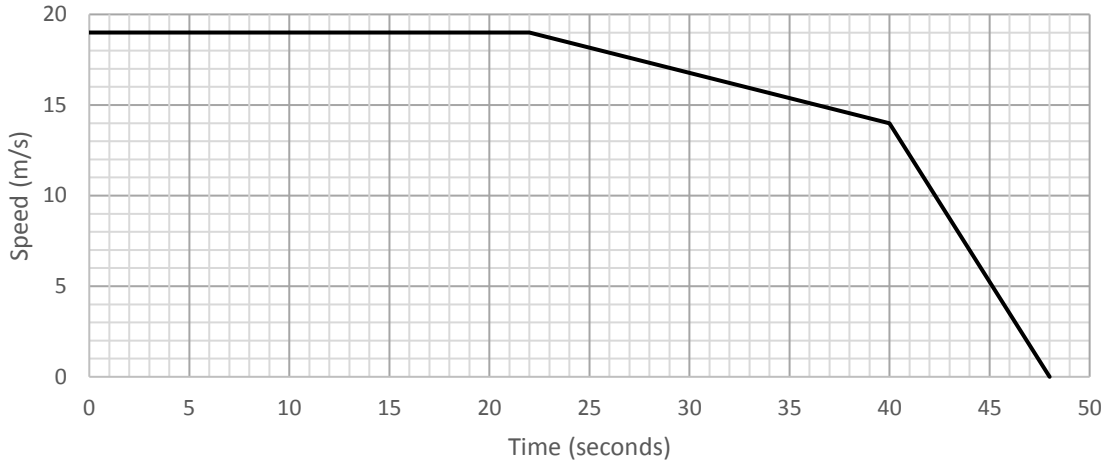
6.
The velocity-time graph below shows the journey of a car between two sets of traffic lights.



(a) Calculate the car's deceleration between 26 and 42 seconds.

(b) How many metres did the car travel?

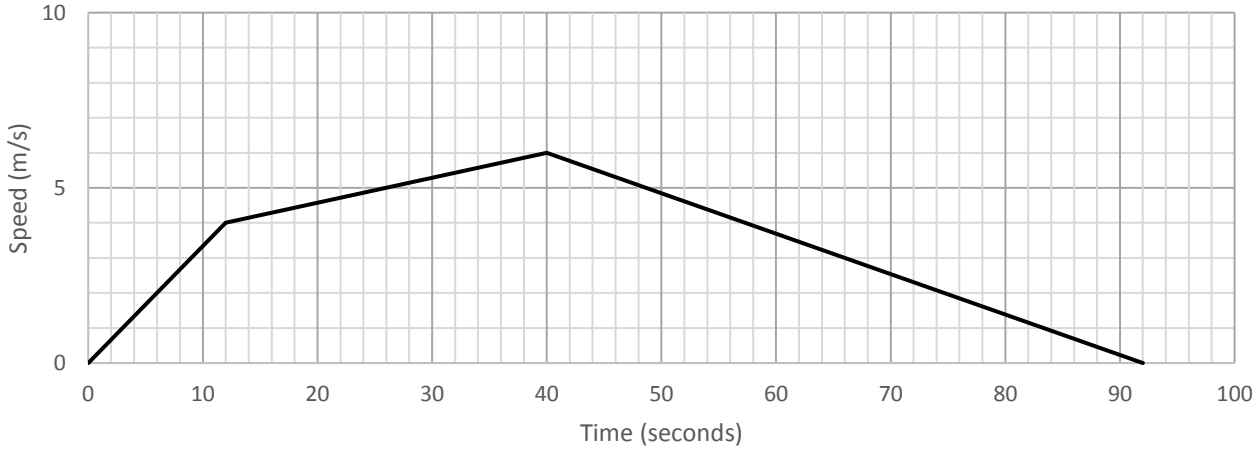
7.
The velocity-time graph shows the last 48 seconds of a motorcyclist's journey.



(a) What was the motorcyclist's speed after 33 seconds?

(b) How many metres did the motorcyclist travel in the final 26 seconds?

8.
Sam went for a swim.
The velocity-time graph below shows how his speed changed over the swim.



(a) Find Sam's acceleration between 12 and 40 seconds.

(b) How many metres did Sam swim?