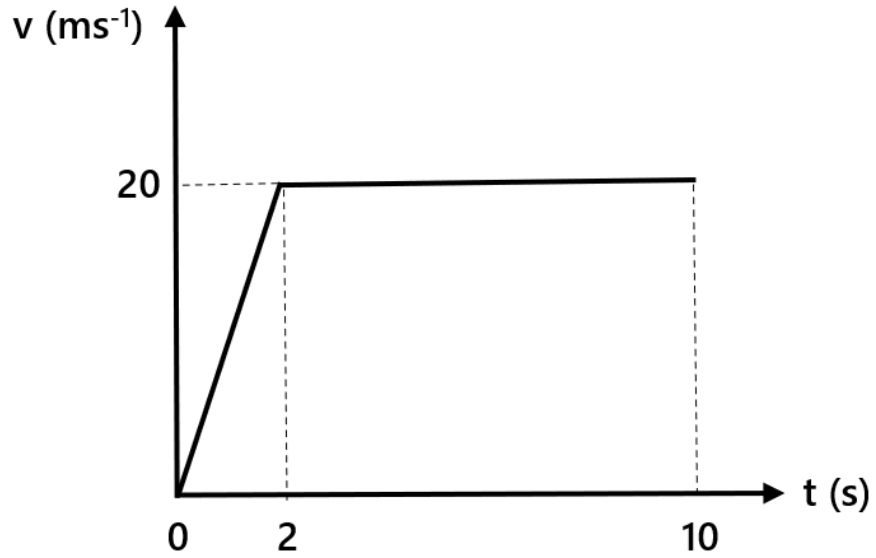
VELOCITY TIME GRAPHS

1) The speed time graph pictured below shows the journey of a car moving on a straight road for 10 seconds. The car begins from rest.

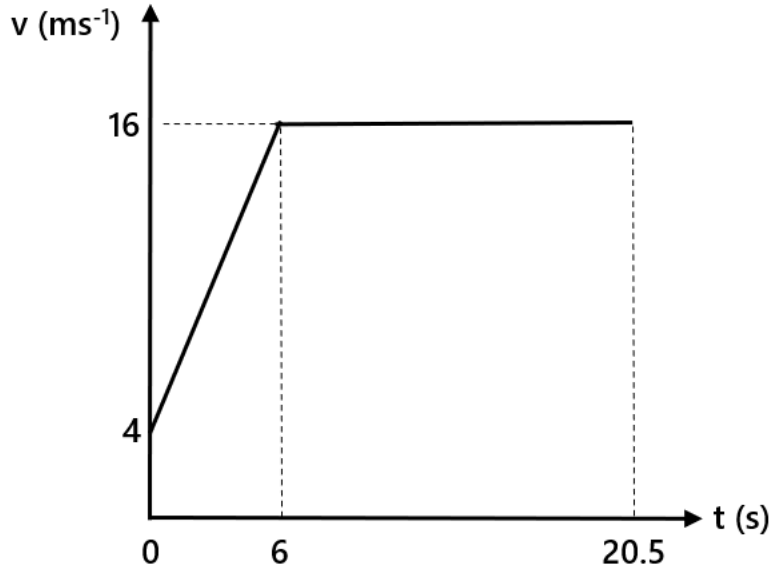


a. Work out the acceleration of the car for the first 2 seconds of the journey.

b. At what time does the car stop accelerating?

c. Work out the total distance travelled by the car.

2) The speed time graph shows the journey of a cyclist.

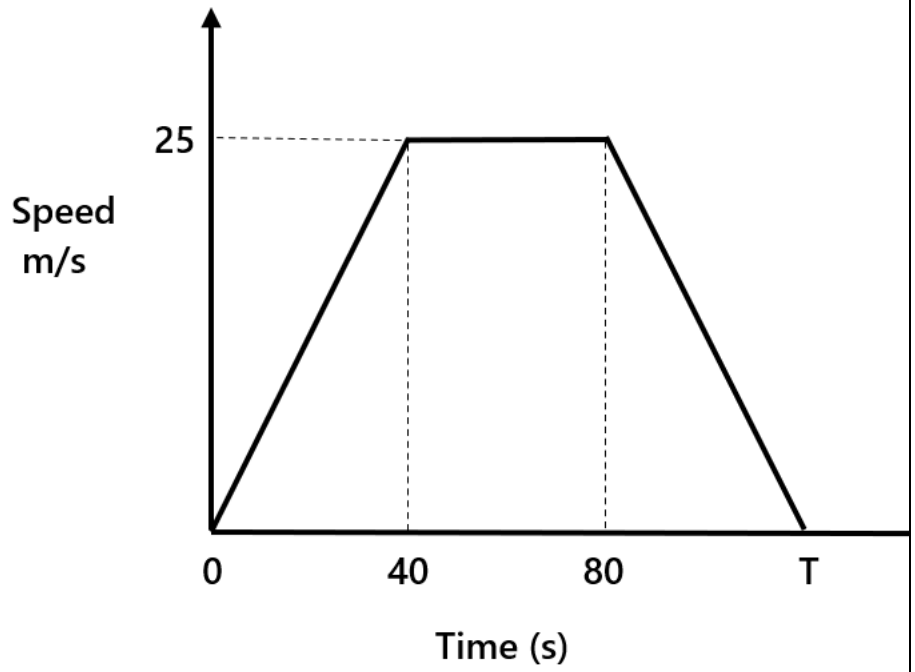


a. Work out the acceleration of the cyclist in the first 6 seconds.

b. Work out the total distance travelled by the cyclist.

c. Convert the distance found in part b to kilometres.

3) The speed time graph shows the journey of a train travelling between two stations.

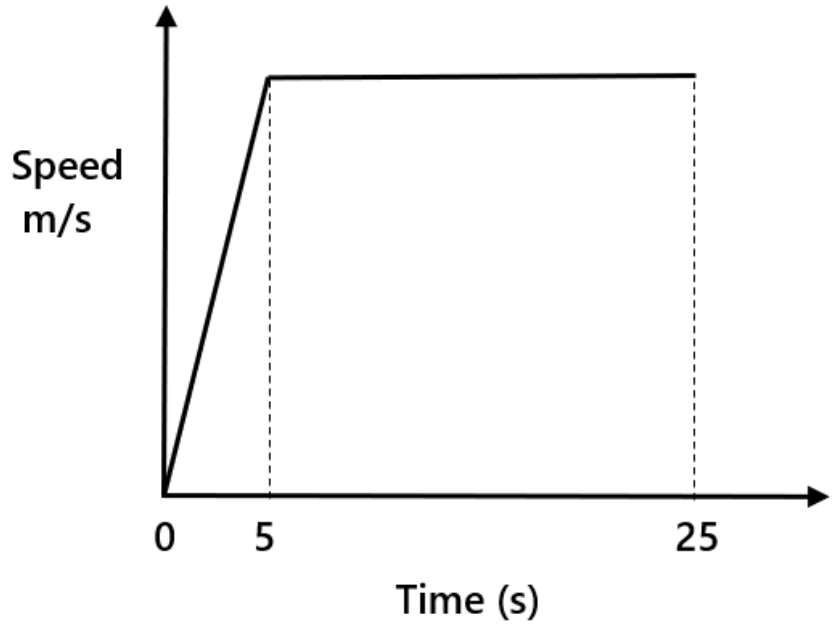


a. Work out the acceleration of the train during the first 40 seconds of the journey.

b. Convert the speed 25 m/s to km/h.

c. Given that the train travelled 2 kilometres in total, work out the value of T.

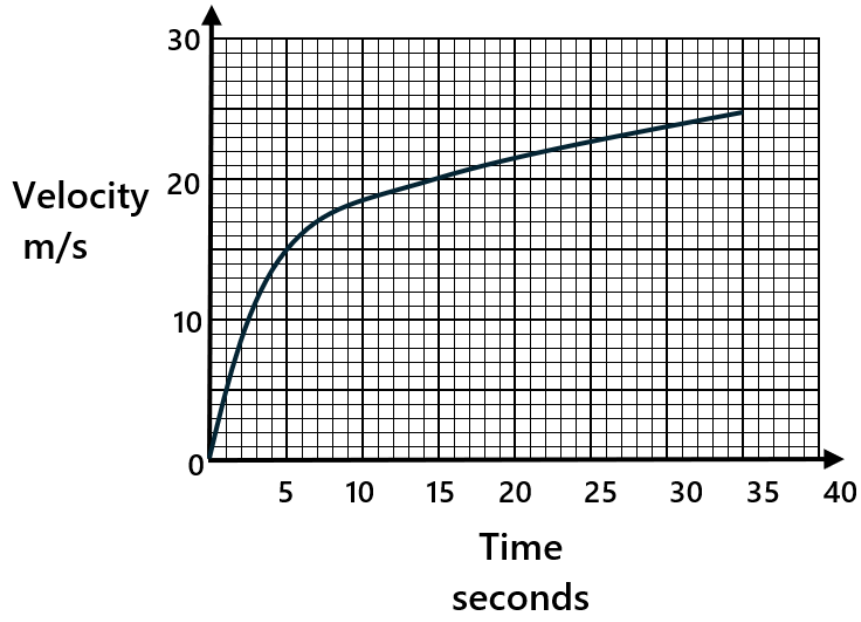
4) The speed time graph shows a plane on a runway as it prepares for take-off.



a. At what time does the plane reach its maximum speed?

b. Given that the plane travels 2000 metres before take-off, work out the maximum speed of the plane on the runway. Give your answer to 3 significant figures.

5) The velocity time graph shows the speed of a truck as it enters a highway.

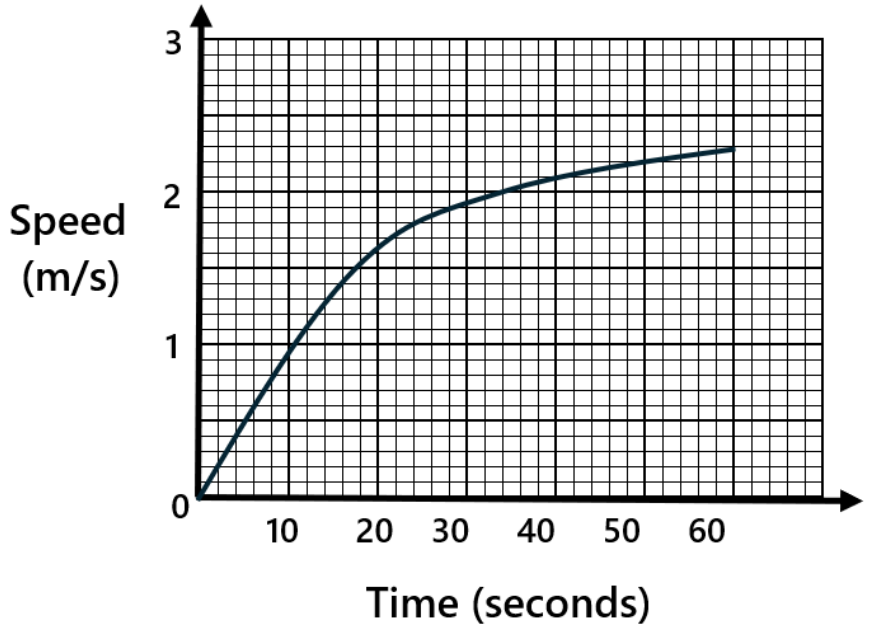


a. Is the truck accelerating or decelerating? Give a reason for your answer.

b. Work out the average acceleration of the truck during the 35 seconds. Give your answer as an exact value.

c. Work out an estimate for the instantaneous acceleration at 5 seconds. Give your answer to 1 decimal place.

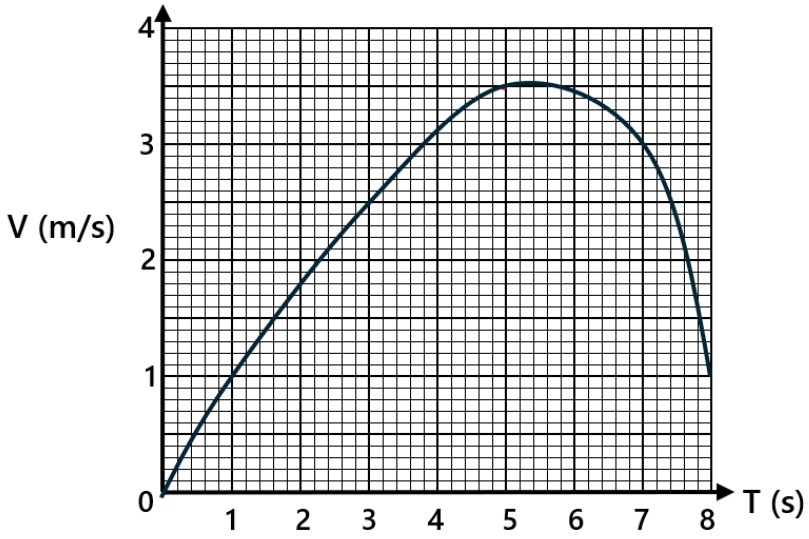
6) The speed time graph shows the speed of a bug while it is in flight.



a. Work out the average acceleration of the bug during the first 60 seconds of flight. Give your answer to 3 decimal places.

b. Estimate the time during the 60 seconds of flight in which the average acceleration is equal to the instantaneous acceleration.

7) The velocity time graph of a particle is shown below.

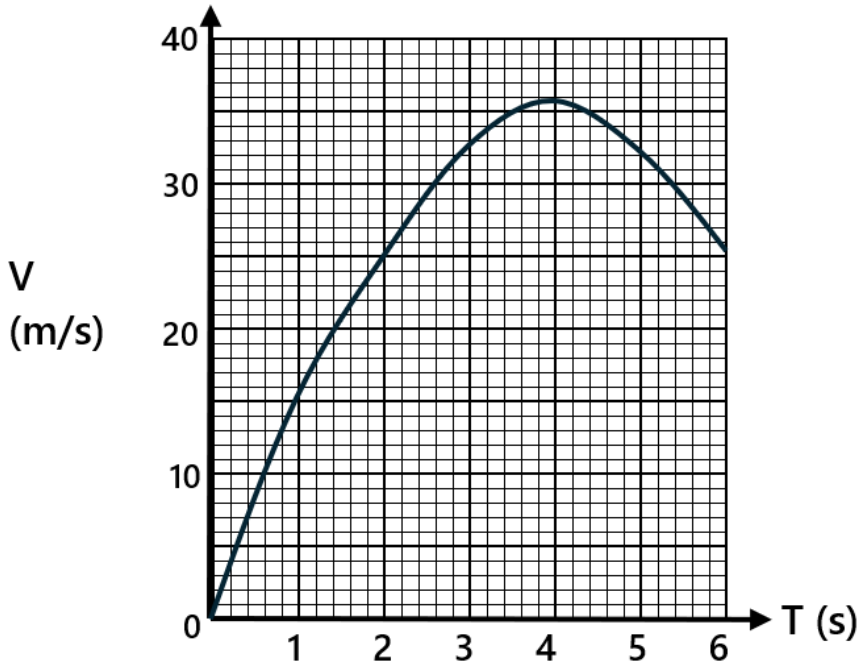


a. Use four strips of equal width to estimate the distance travelled during the first four seconds.

b. Is your answer to part a, an over or underestimate? Give a reason for your answer.

c. Explain how you can improve the accuracy of your estimation.

8) The velocity time graph for a ride at an amusement park is shown below.



a. Work out an estimate for the instantaneous acceleration of the ride at 2 seconds.

b. Use 6 strips of equal width to find an estimate for the area under the graph in the first 6 seconds of motion.

c. Explain what your answer to part b represents.