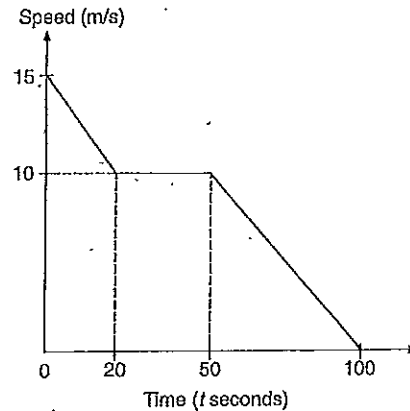


22. The diagram shows the speed-time graph of a bus.
Calculate

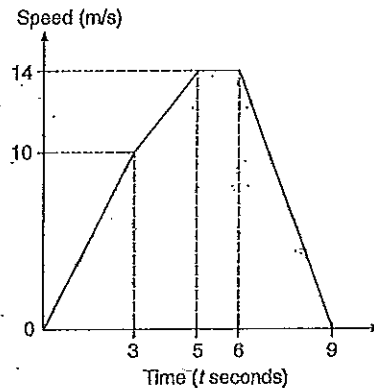
- the retardation during
 - the first 20 seconds,
 - the last 20 seconds,
- the speed when $t = 8$,
- the total distance travelled during the 100 s,
- the average speed for the whole journey.



23. The graph shows the speed-time graph of an object moving in a straight line during a period of 9 seconds.

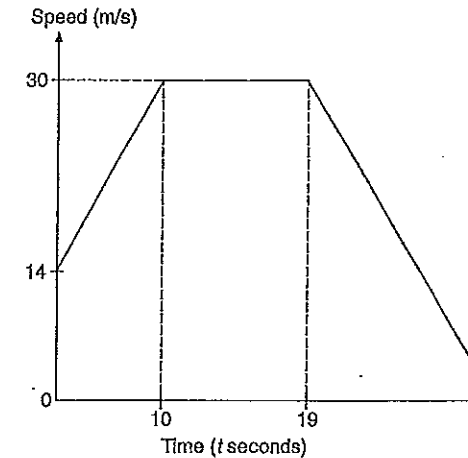
Find

- the acceleration in the first 3 seconds,
- the acceleration in the next 2 seconds,
- the retardation in the last 3 seconds,
- the speed when $t = 7$,
- the maximum speed,
- the distance travelled in the first 5 seconds.



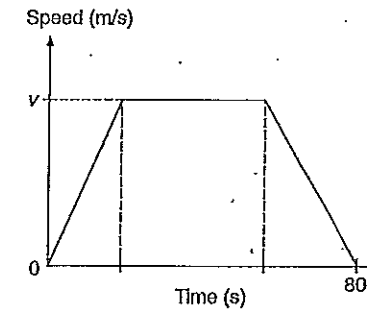
24. The diagram shows the speed-time graph of a motorist.

- Calculate the acceleration during the first 8 seconds.
- Calculate the speed when $t = 6$.
- If the acceleration in the first 8 seconds is twice the rate of its deceleration after 19 seconds, calculate the total time taken for the whole journey.

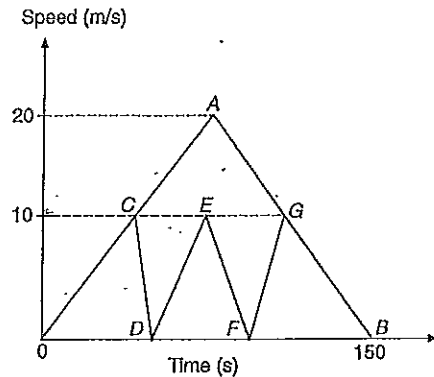


25. The diagram shows the speed-time graph of a van over a period of 80 seconds. The van reaches a maximum speed of 14 m/s.

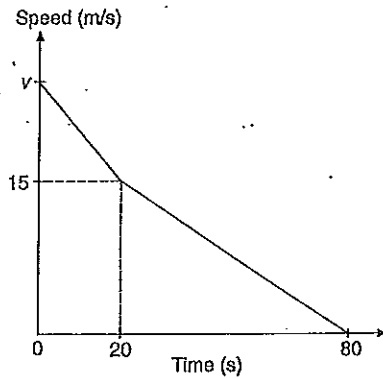
- Find the value of v .
- Express 14 m/s in km/h.
- If the acceleration was 0.7 m/s^2 , calculate the time taken, in seconds, to reach its maximum speed.
- The van travelled a total distance of 805 metres. Calculate the length of time that the van was travelling at its maximum speed.



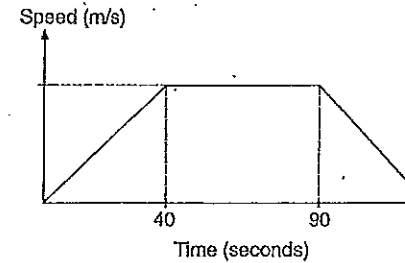
26. (a) The speed-time graph of a car over a period of 150 seconds consists of the two lines, OA and AB . Calculate the distance travelled by the car in this period of time.
- (b) The speed-time graph of a motorcycle over the same period consists of the lines OC , CD , DE , EF , FG and GB . Calculate, for the motorcycle,
- the total distance travelled for the whole journey,
 - the average speed for the whole journey.



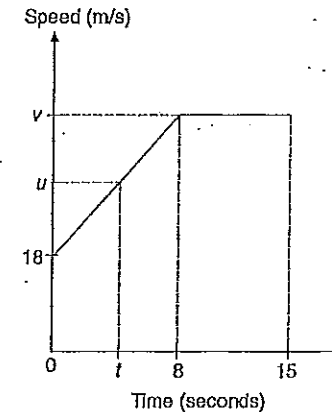
27. The diagram shows the speed-time graph of a bus which is uniformly retarded from v m/s to 15 m/s in 20 seconds. The bus is then uniformly retarded at a different rate until it finally comes to a rest after travelling a further 60 seconds. Calculate
- the speed of the bus after 30 seconds,
 - the retardation during the final 60 seconds,
 - the value of v given that the bus travelled a total distance of 840 m,
 - the average speed during the 80 seconds.



28. The diagram shows the speed-time graph of a train over a period of t seconds. distance covered in the first 50 seconds is 540 metres.
- (a) Calculate
- the maximum speed during the first 90 seconds,
 - the acceleration during the first 40 seconds,
 - the average speed during the first 90 seconds.
- (b) After 90 seconds, the train begins to decelerate uniformly at 0.6 m/s^2 until it comes to rest after t seconds. Find
- the value of t ,
 - the average speed for the whole journey.



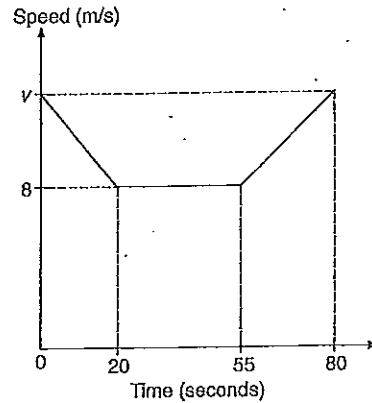
29. The diagram shows the speed-time graph of a van which accelerates at 0.75 m/s^2 8 seconds and then travels at a constant speed of v m/s for the next 7 seconds. The initial speed of the van is 18 m/s.
- Calculate the value of v .
 - Calculate the distance travelled during the 15 seconds.
 - Given the speed at t seconds is u m/s, express u in terms of t .



30. The diagram shows the speed-time graph of a bus, which travelled a total of 730 metres in 80 seconds.

Calculate

- (a) the value of v ,
- (b) the retardation in the first 20 seconds,
- (c) the acceleration in the last 25 seconds,
- (d) the average speed during the 80 seconds.



31. The diagram shows a particle travelling at a constant speed of u m/s for the first 8 seconds of its motion. During the next 6 seconds, its speed v m/s from the start was given by $v = 25 - 2t$.

Find

- (a) the value of u ,
- (b) the total distance travelled during the 14 seconds.

