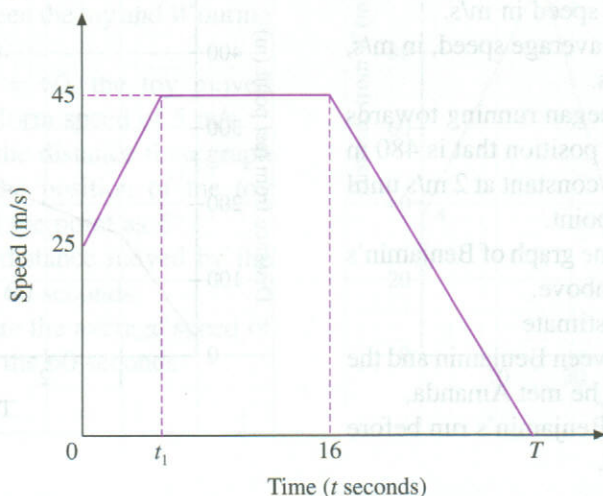
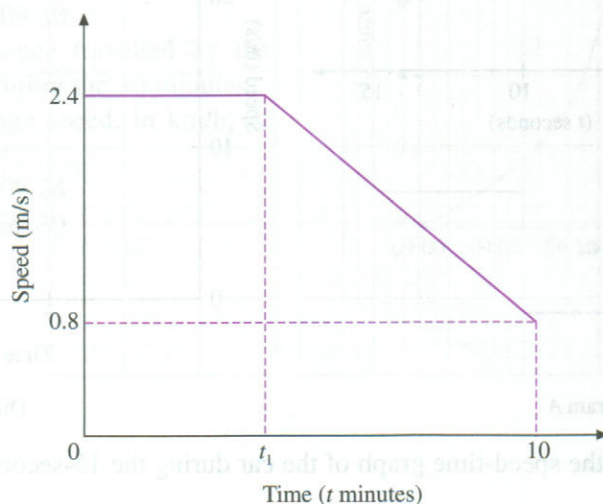


19. The diagram shows the speed-time graph of a racing car during an interval of T seconds. At $t = 0$, the speed of the racing car was 25 m/s. From $t = 0$ to $t = t_1$, the racing car accelerated at $3\frac{1}{3}$ m/s² until it reached a maximum speed of 45 m/s. The racing car continued to move at 45 m/s between $t = t_1$ and $t = 16$. From $t = 16$ to $t = T$, the racing car travelled 270 m.



Find

- the values of t_1 and T ,
 - the speed of the racing car when $t = 5$,
 - the deceleration of the racing car between $t = 16$ and $t = T$,
 - the value of t when the speed of the racing car is 24 m/s,
 - the total distance travelled by the racing car during the T seconds.
20. The diagram shows a simplified speed-time graph of a jogger over a period of 10 minutes.



- Find the value of t_1 if the distance covered by the jogger from $t = 0$ to $t = t_1$ equals the distance covered from $t = t_1$ to $t = 10$.
- Hence, find
 - the total distance covered by the jogger during the 10 minutes,
 - the deceleration of the jogger, in m/s², between $t = t_1$ and $t = 10$,
 - the speed of the jogger, in m/s, when $t = 7$.
- A second jogger ran for 12 minutes and covered 5% more in distance than the first jogger. Find the average speed of the second jogger in m/s.