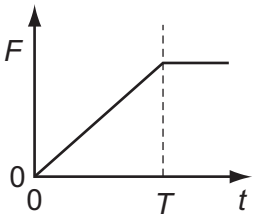
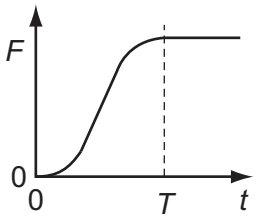
6 A sky diver falls vertically from a stationary balloon. She leaves the balloon at time $t = 0$. At time $t = T$, she reaches terminal velocity. Beyond the time shown in the graphs, she opens her parachute.

Which graph shows the variation with time t of the force F due to air resistance?

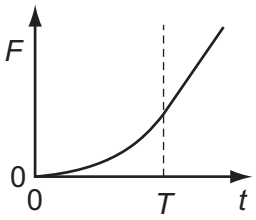
A



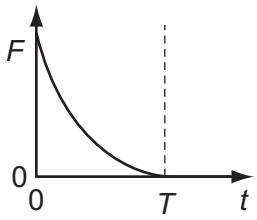
B



C



D



7 The diagram shows an arrangement to stop trains that are travelling too fast.

Trains coming from the left travel at a speed of $50\,m\,s^{-1}$. At marker 1, the driver must apply the brakes so that the train decelerates uniformly in order to pass marker 2 at no more than $10\,m\,s^{-1}$.

The train carries a detector that notes the times when the train passes each marker and will apply an emergency brake if the time between passing marker 1 and marker 2 is less than 20 s.

How far from marker 2 should marker 1 be placed?

A 200 m **B** 400 m **C** 500 m **D** 600 m

Space for working