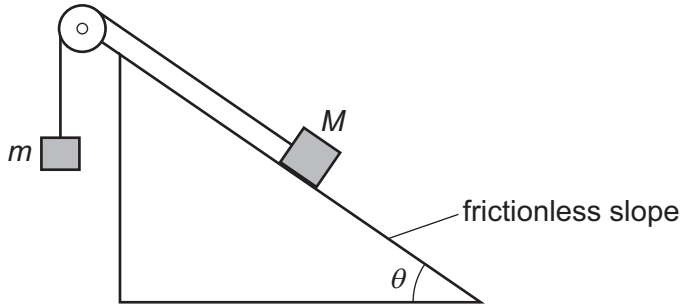
7 Two masses, *M* and *m*, are connected by an inextensible string which passes over a frictionless pulley. Mass *M* rests on a frictionless slope, as shown.



The slope is at an angle θ to the horizontal.

The two masses are initially held stationary and then released. Mass *M* moves down the slope.

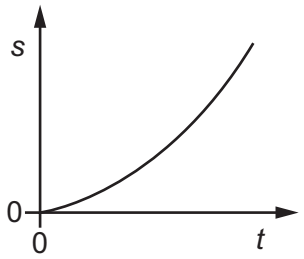
Which expression **must** be correct?

A $\sin\theta < \frac{m}{M}$ **B** $\cos\theta < \frac{m}{M}$ **C** $\sin\theta > \frac{m}{M}$ **D** $\cos\theta > \frac{m}{M}$

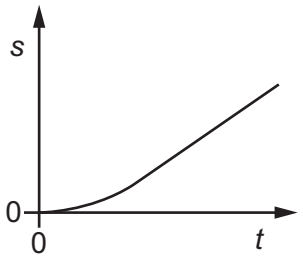
8 A sky-diver falls from a stationary balloon at time $t = 0$. As the sky-diver falls, her speed and the air resistance increase until the force of the air resistance is equal to her weight.

Which graph best shows the variation with time *t* of the displacement *s* for the motion of the sky-diver?

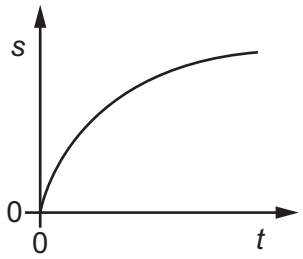
A



B



C



D