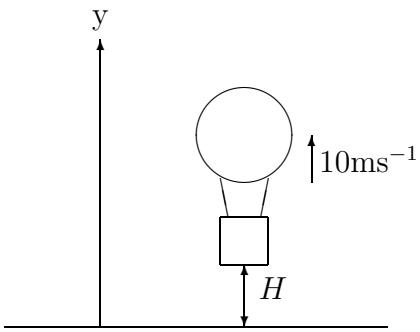
Question
A stone is dropped from a balloon rising at 10ms^{-1} and reaches the ground in 8 seconds. How high was the balloon above the ground when the stone was dropped.

Answer



Newton's 2nd law: $m\ddot{y} = -mg \Rightarrow \ddot{y} = -g$
Initially the stone has speed 10ms^{-1} upwards.
Therefore $y = 10t - \frac{1}{2}gt^2 + H$
$y = 0$ at $t = 8 \Rightarrow H = 233\text{m}$.