

- 11** The Earth may be considered to be a uniform sphere of mass  $M$  and radius  $R$ . An apple of mass  $m$  falls from rest from a height  $h$  to the ground, where  $h \ll R$  such that the gravitational field strength  $g$  experienced by the apple during its fall may be assumed to be constant.

What is the gain in kinetic energy of the apple?

**A**  $mgR$

**B**  $\frac{GMmh}{R^2}$

**C**  $\frac{GM}{R} - \frac{GM}{R+h}$

**D**  $m\left(\frac{GM}{R+h} - \frac{GM}{R}\right)$