

- 15 A raindrop of mass  $m$  is falling vertically through the air with a steady speed  $v$ . The raindrop experiences a retarding force  $kv$  due to the air, where  $k$  is a constant. The acceleration of free fall is  $g$ .

Which expression gives the kinetic energy of the raindrop?

A  $\frac{mg}{k}$

B  $\frac{mg^2}{2k^2}$

C  $\frac{m^3g^2}{k^2}$

D  $\frac{m^3g^2}{2k^2}$

**Space for working**