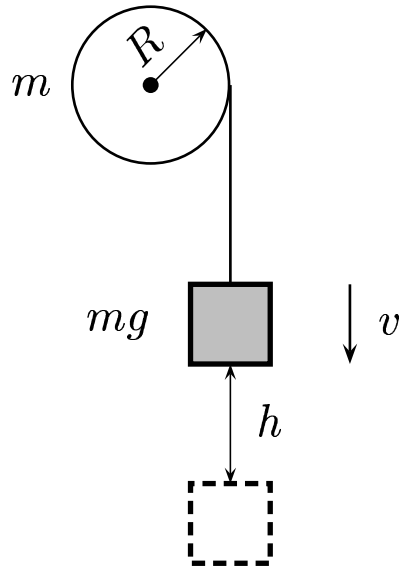


A circular disk with mass m and radius R is mounted at its center, about which it can rotate freely. A light cord wrapped around it supports mg .



Find the total kinetic energy of the system, when the mass m is falling with the speed v .

A) $K = \frac{1}{2} m v^2$

B) $K = \frac{3}{4} m v^2$.

C) $K = m v^2$

D) $K = \frac{5}{4} m v^2$.

Based on conservation of energy, express v in terms of the falling distance h .

$$K = K_{trans} + K_{rot} = \frac{1}{2} m v^2 + \frac{1}{4} m R^2 \omega^2 = \frac{3}{4} m v^2 .$$

Answer **B**.