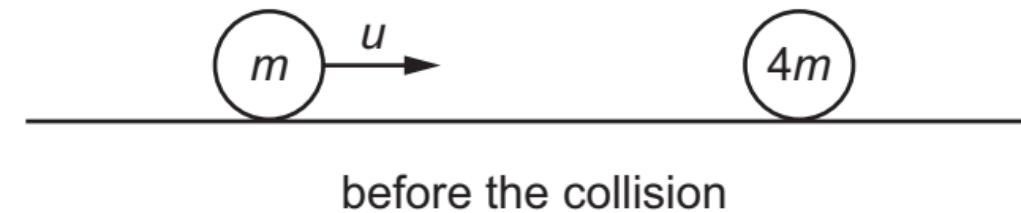


- 10** An object of mass m , moving at speed u along a frictionless horizontal surface, collides head-on with a stationary object of mass $4m$.



After the collision, the object of mass m rebounds along its initial path with $\frac{1}{4}$ of its kinetic energy before the collision.

What is the speed of the object of mass $4m$ after the collision?

A $\frac{u}{8}$

B $\frac{3u}{16}$

C $\frac{5u}{16}$

D $\frac{3u}{8}$

- 11** The value of $\sin^2 \theta + \cos^2 \theta$ is always equal to one, where θ is an angle between 0° and 90°.