Consider the setup shown where block \( m_1 \) moves down a smooth curved surface collides with the block \( m_2 \).

After a head-on elastic collision, what is the speed of \( m_2 \), if \( m_1 = m_2 = m \)?

A) \( v = \sqrt{gh} \).
B) \( v = \sqrt{2gh} \).
C) \( v = 2\sqrt{gh} \).

Immediately before the collision, conservation of energy implies that
\[
\frac{1}{2} m v_1^2 = mgh.
\]

After the elastic head-on collision, the velocity of block-2 is given by
\( v'_2 = 2v_{cm} - v_2 \).
For the present case, \( m_1 = m_2 \) and initially the block-2 is at rest, \( v_{cm} = \frac{m v_1 + m v_2}{2m} = \frac{v_1}{2} \).
Thus \( v'_2 = 2 \frac{v_1}{2} - 0 = v_1 = \sqrt{2gh} \).

Answer B.