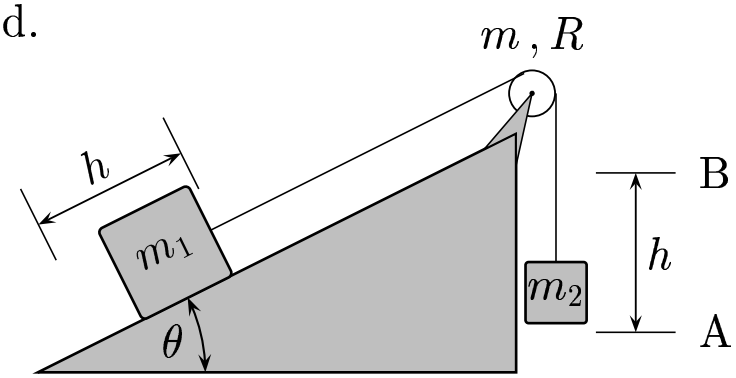
In the sketch below, the pulley is a circular disk with mass m and radius R, where $m_1 \gg m_2$. When m_2 is released at A, m_2 is being accelerated upward.



Find the conservation of energy equation for the system, as m_2 goes from A to B. Ignore friction.

A) $m_1\, g\, h \sin\theta - m_2\, g\, h = \dfrac{(\, m_1 + m_2 + m\,)\, v^2}{2}$.

B) $m_2\, g\, h \sin\theta - m_1\, g\, h = \dfrac{(\, m_1 + m_2 + m\,)\, v^2}{2}$.

C) $m_1\, g\, h \sin\theta - m_2\, g\, h = \dfrac{(\, m_1 + m_2 + 0.5\, m\,)\, v^2}{2}$.

D) $m_2\, g\, h \sin\theta - m_1\, g\, h = \dfrac{(\, m_1 + m_2 + 0.5\, m\,)\, v^2}{2}$.

$$U_A - U_B = K_B - K_A = K_B\,.$$

The amount of the potential energy which m_1 has released in going from A to B is given by

$$m_1\, g\ h\, \sin\theta = m_1\, g_{\|}\, h\,.$$

Answer **C**.