

Massless Pulley Example

Consider the two masses connected by a pulley as shown. Use conservation of energy to calculate the speed of the blocks after m_2 has dropped a distance h . Assume the pulley is massless.

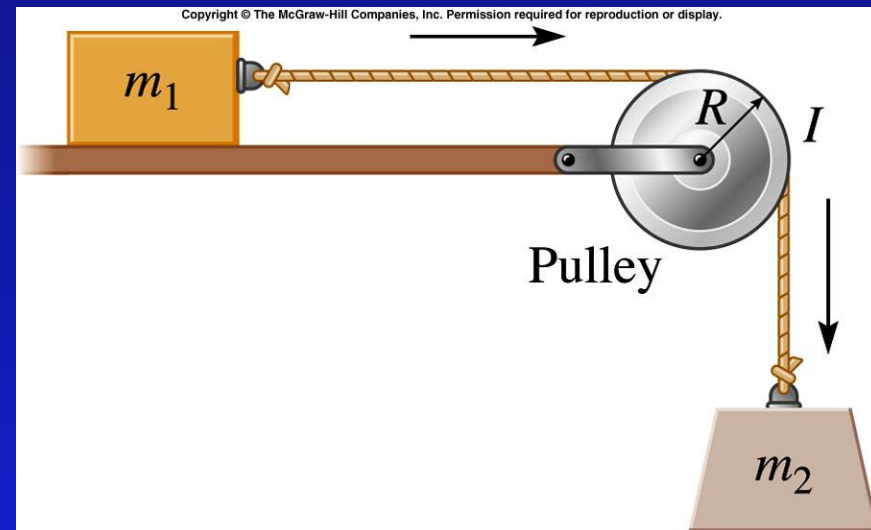
$$\sum W_{NC} = \Delta K + \Delta U$$

$$U_{initial} + K_{initial} = U_{final} + K_{final}$$

$$0 + 0 = -m_2gh + \frac{1}{2}m_1v^2 + \frac{1}{2}m_2v^2$$

$$2m_2gh = m_1v^2 + m_2v^2$$

$$v = \sqrt{\frac{2m_2gh}{m_1 + m_2}}$$



Note: Tension does positive work on 1 and negative work on 2. Net work (on 1 and 2) by tension is ZERO.