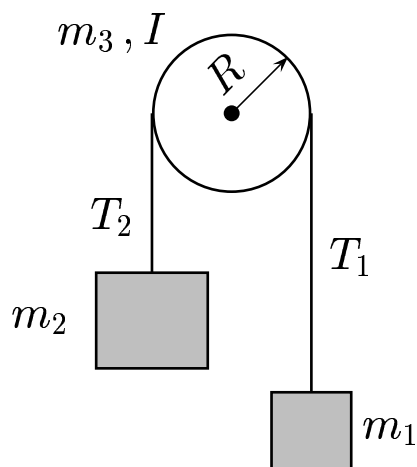


Consider the Atwood Machine shown in the sketch. The pulley has a radius R and the moment of inertia I and $m_2 > m_1$. Since there are three moving objects, there should be three equations of motion. Two of them are $T_1 - m_1 g = m_1 a$ and $m_2 g - T_2 = m_2 a$.



What is the third equation?

- A) $(T_2 - T_1) R = \frac{I a}{2 R}$.
- B) $(T_2 - T_1) R = \frac{I R}{2 a}$.
- C) $(T_2 - T_1) R = \frac{I a}{R}$.
- D) $(T_2 - T_1) R = \frac{I R}{a}$.

The equation of motion for the pulley is $\tau = I \alpha$, where $\alpha = \frac{a}{R}$. Notice that since m_2 is descending, T_2 should be greater than T_1 , Answer **C**.