Unit 01: Power, Impulse, & Conservation of Momentum

$$P = \frac{W}{t} \qquad P = \frac{F \cdot d}{t} \qquad P = F \cdot v$$

$$P = \frac{\left(\frac{1}{2} m \cdot v_f^2 - \frac{1}{2} m \cdot v_i^2\right)}{t}$$

for kinetic energy

$$P = \frac{m \cdot g \cdot h}{t} \qquad P = m \cdot g \cdot v$$

for gravitational potential energy

$$P = \frac{m \cdot g \cdot \mu \cdot d}{t} \qquad P = m \cdot g \cdot \mu \cdot v$$

for work to overcome friction

$$P = \frac{m \cdot g \cdot \mu \cdot d \cdot \cos\theta}{t} \qquad P = m \cdot g \cdot \mu \cdot v \cdot \cos\theta$$

for work to overcome friction on an incline

$$\rho = m \cdot v \qquad F = \frac{\Delta\rho}{t} \qquad \Delta\rho = J \qquad J = \left(m \cdot v_f - m \cdot v_i\right) = m\left(v_f - v_i\right) \qquad J = F \cdot t$$

$$m_1 v_{1i} + m_2 v_{2i} = m_1 v_{1f} + m_2 v_{2f}$$

$$m_1 v_{1i} + m_2 v_{2i} = (m_1 + m_2) v_f$$

$$(m_1 + m_2) v_i = m_1 v_{1f} + m_2 v_{2f}$$

1 kW = 1000 W

1 hp = 746 Watts