

Name:

Key

ID #

1- A 6.0-kg block initially at rest is pulled to the right along a horizontal, frictionless surface by a constant horizontal force of 12 N. Find the speed of the block after it has moved 3.0 m.

$$W = \vec{F} \cdot \vec{d} = \Delta K$$

$$12(3) \leftrightarrow 0 = \frac{1}{2} m (v_f^2 - v_i^2)$$

$$36 = \frac{1}{2} (6) v_f^2$$

$$v_f = \sqrt{12} \approx 3.5 \frac{\text{m}}{\text{s}}$$

2- As a particle (of mass 1 kg) moves from point A to point B only two forces act on it: one force does -30 J work, while the other force does +50 J work. **Calculate** the final speed of the particle at point B, if it starts from rest at point A.

$$W_{\text{net}} = \Delta K$$

$$-30 + 50 = \frac{1}{2} m (v_f^2 - v_i^2)$$

$$20 = \frac{1}{2} (1) v_f^2$$

$$v_f = \sqrt{40} = 6.3 \frac{\text{m}}{\text{s}}$$