

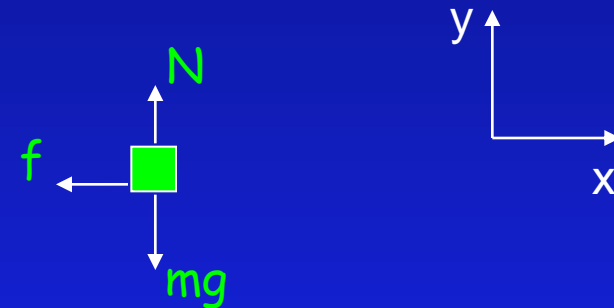
Example: Block w/ friction

- A block is sliding on a surface with an initial speed of 5 m/s. If the coefficient of kinetic friction between the block and table is 0.4, how far does the block travel before stopping?

Y direction: $\Sigma F=ma$

$$N - mg = 0$$

$$N = mg$$



Work

$$W_N = 0$$

$$W_{mg} = 0$$

$$W_f = f \Delta x \cos(180) \\ = -\mu mg \Delta x$$

$W = \Delta K$

$$-\mu mg \Delta x = \frac{1}{2} m (v_f^2 - v_0^2)$$

$$-\mu g \Delta x = \frac{1}{2} (0 - v_0^2)$$

$$\mu g \Delta x = \frac{1}{2} v_0^2$$

$$\Delta x = \frac{1}{2} v_0^2 / \mu g$$

$$= 3.1 \text{ meters}$$

