

$$m = 2.0 \text{ g} = .002 \text{ kg}$$

$$v_f = 300 \text{ m/s}$$

a) $KE_f = ?$

$$KE_f = \frac{1}{2} \cdot m \cdot v_f^2$$

$$= \frac{1}{2} (.002 \text{ kg}) (300 \text{ m/s})^2$$

$$KE_f = 90 \text{ J}$$

b) $KE_i = 0$

$$KE_f = 90 \text{ J}$$

$$d = 50 \text{ cm} = .50 \text{ m}$$

$$KE_i + W = KE_f$$

$$0 + F \cdot d = KE_f$$

$$F(.50 \text{ m}) = 90 \text{ J}$$

$$F = 180 \text{ N}$$