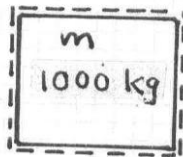


PROBLEM 2.6

KNOWN: An object of known mass decelerates from a given initial velocity to a known final velocity.

FIND: Determine the change in kinetic energy of the object.

SCHEMATIC & GIVEN DATA:



$$V_1 = 100 \text{ m/s}$$

$$V_2 = 20 \text{ m/s}$$

ENGR. MODEL : The object is a closed system.

ANALYSIS: The change in kinetic energy is

$$\Delta KE = \frac{1}{2}m[V_2^2 - V_1^2]$$

Inserting known values and converting units

$$\Delta KE = \frac{1}{2} (1000 \text{ kg}) [20^2 - 100^2] \frac{\text{m}^2}{\text{s}^2} \left| \frac{1 \text{ N}}{1 \text{ kg} \cdot \text{m/s}^2} \right| \left| \frac{1 \text{ kJ}}{10^3 \text{ N} \cdot \text{m}} \right|$$

$$= -4800 \text{ kJ}$$

ΔKE