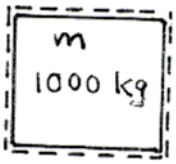
PROBLEM 2.6

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:



$V_1 = 100$ m/s

$V_2 = 20$ m/s

ENGR. MODEL: The object is a closed system.

ANALYSIS: The change in kinetic energy is

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

Inserting known values and converting units

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

$$= -4800\ \text{kJ} \longleftarrow \Delta KE$$