

## Ther. E. HW #2

①

$$\textcircled{E1} \quad m = 500 \text{ g} \quad \Delta T = 30 - 20 \text{ C} = 10 \text{ C}$$

$$C(\text{H}_2\text{O}) = 4180 \text{ J/kg C}$$

$$W = Q = mc\Delta T = 0.5 \text{ Kg} (4180 \frac{\text{J}}{\text{Kg C}}) (10 \text{ C})$$

$$W = 20,900 \text{ J}$$

$$\textcircled{E2} \quad \text{wrecking ball } m = 100 \text{ Kg}, \quad h = 25 \text{ m}, \quad 32 \text{ times}$$

$$\text{roof } m = 1 \text{ kg}, \quad C(\text{Ae}) = 903 \text{ J/kg C}$$

$$\text{Part \#1} \quad W = \Delta PE (\# \text{ times}) = Q (\text{wrecking ball})$$

$$W = (100 \text{ Kg}) (9.8 \text{ m/s}^2) (25 \text{ m}) (32) = 784,000 \text{ J}$$

$$\text{Part \#2} \quad (\text{Roof})$$

$$W = 784,000 \text{ J} = Q = mc\Delta T$$

$$\frac{784,000 \text{ J}}{(1 \text{ Kg}) (903 \frac{\text{J}}{\text{Kg C}})} = \Delta T$$

$$868 \text{ C} = \Delta T$$