

## Problems #2

1. A 0.240 kg copper mass ( $c = 3.90 \times 10^2 \text{ J/kg}^\circ\text{C}$ ) is heated to  $215^\circ\text{C}$  and quickly placed into an insulated container that contains 0.275 kg of water ( $c = 4.18 \times 10^3 \text{ J/kg}^\circ\text{C}$ ) that has a temperature of  $12.0^\circ\text{C}$ . What is the final temperature of the water?

2. A student did an experiment to determine the specific heat capacity of an unknown metal. She heated  $0.352 \text{ kg}$  of the metal to  $215^\circ\text{C}$  and quickly placed it into an insulated container that contained  $0.265 \text{ kg}$  of water at a temperature of  $26.0^\circ\text{C}$ . If the final temperature of the water is  $33.0^\circ\text{C}$ , what is the specific heat capacity of the metal?

3. 20.0 g of an unknown liquid at a temperature of  $10.0^{\circ}\text{C}$  is mixed completely with 29.0 g of the same liquid at a temperature of  $52.0^{\circ}\text{C}$ . What is the final temperature ( $T_2$ ) of the mixture?