

## T- 3 ANSWERS

The specific heat capacity for copper is  $0.39 \text{ J/g}\cdot^{\circ}\text{C}$

1. How many joules does it take to raise the temperature of a piece of copper that is 307 grams and at  $11.5^{\circ}\text{C}$ , until it warms to  $40.5^{\circ}\text{C}$ ?

$$q = mC\Delta T$$

$$q = (307\text{g})(0.39 \text{ J/g}\cdot^{\circ}\text{C})(29.0^{\circ}\text{C})$$

$$q = 3472 \text{ Joules} \text{ ---> } 3470 \text{ J (3 sf)}$$

2. How much energy does it take to warm up 50.0 mL of pure water from  $12.15^{\circ}\text{C}$  to  $22.55^{\circ}\text{C}$ ?

$$q = mC\Delta T$$

$$q = (50.0\text{g})(4.18 \text{ J/g}\cdot^{\circ}\text{C})(10.40\text{C})$$

$$q = 2173.6 \text{ Joules} \text{ ---> } 2170 \text{ J (3 sf)}$$

3. The "C" of "Hg" is  $0.14 \text{ J/g}\cdot^{\circ}\text{C}$ . How much heat is lost from 356 grams of mercury when it changes temperature from  $75.1^{\circ}\text{C}$  to  $21.1^{\circ}\text{C}$ ?

$$q = mC\Delta T$$

$$q = (356\text{g})(0.14 \text{ J/g}\cdot^{\circ}\text{C})(54.0^{\circ}\text{C})$$

$$q = 2691 \text{ Joules} \text{ ---> } 2690 \text{ J (3 sf)}$$