

### Specific Heat Worksheet

$$q = (\text{mass})(C_{\text{sp}})(\Delta T)$$

$$\text{Units for specific heat} = \frac{\text{J}}{\text{g} \cdot ^\circ\text{C}}$$

1. What is the specific heat of a substance that absorbs  $2.5 \times 10^3$  joules of heat when a sample of  $1.0 \times 10^4$  g of the substance increases in temperature from  $10.0^\circ\text{C}$  to  $70.0^\circ\text{C}$ ?
2. How many grams of water would require  $2.20 \times 10^4$  joules of heat to raise its temperature from  $34.0^\circ\text{C}$  to  $100.0^\circ\text{C}$ ? The specific heat of water is  $4.18 \text{ J/g}\cdot^\circ\text{C}$
3. If 200. grams of water is to be heated from  $24.0^\circ\text{C}$  to  $100.0^\circ\text{C}$  to make a cup of tea, how much heat must be added? The specific heat of water is  $4.18 \text{ J/g}\cdot^\circ\text{C}$
4. A block of aluminum weighing 140. g is cooled from  $98.4^\circ\text{C}$  to  $62.2^\circ\text{C}$  with the release of 1080 joules of heat. From this data, calculate the specific heat of aluminum.
5. A cube of gold weighing 192.4g is heated from  $30.0^\circ\text{C}$  to some higher temperature, with the absorption of 226 joules of heat. The specific heat of gold is  $0.030 \text{ J/g}\cdot^\circ\text{C}$ . What was the final temperature of the gold?
6. A total of 54.0 joules of heat are absorbed as 58.3 g of lead is heated from  $12.0^\circ\text{C}$  to  $42.0^\circ\text{C}$ . From these data, what is the specific heat of lead?
7. The specific heat of wood is  $2.03 \text{ J/g}\cdot^\circ\text{C}$ . How much heat is needed to convert 550 g of wood at  $-15.0^\circ\text{C}$  to  $10.0^\circ\text{C}$ ?
8. What is the total amount of heat needed to change 2.25 kg of silver at  $0.0^\circ\text{C}$  to  $200.0^\circ\text{C}$ ? The specific heat of silver is  $0.129 \text{ J/g}\cdot^\circ\text{C}$