

Heat Calculations

a. Perform calculations using: $q = m \cdot c \cdot \Delta T$

b. Determine if it's endothermic or exothermic

1. Gold has a specific heat of $0.129 \text{ J}/(\text{g}\cdot^\circ\text{C})$. How many joules of heat energy are required to raise the temperature of 15 grams of gold from 22°C to 85°C ?

2. An unknown substance with a mass of 100 grams absorbs 1000 J while undergoing a temperature increase of 15°C . What is the specific heat of the substance?

Endothermic or exothermic?

Endothermic or exothermic?

3. If the temperature of 34.4 g of ethanol increases from 25°C to 78.8°C , how much heat has been absorbed by the ethanol? The specific heat of ethanol is $2.44 \text{ J}/(\text{g}\cdot^\circ\text{C})$

4. Graphite has a specific heat of $0.709 \text{ J}/(\text{g}\cdot^\circ\text{C})$. If a 25 gram piece of graphite is cooled from 35°C to 18°C , how much energy was lost by the graphite?

Endothermic or exothermic?

Endothermic or exothermic?

5. Copper has a specific heat of $0.385 \text{ J}/(\text{g}\cdot^\circ\text{C})$. A piece of copper absorbs 5000 J of energy and undergoes a temperature change from 100°C to 200°C . What is the mass of the piece of copper?

6. 45 grams of an unknown substance undergoes a temperature increase of 38°C after absorbing 4172.4 Joules. What is the specific heat of the substance? Look at the table on page 513 of your book, and identify the substance.

Endothermic or exothermic?

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7. A 40 g sample of water absorbs 500 Joules of energy. How much did the water temperature change? The specific heat of water is $4.18 \text{ J}/(\text{g}\cdot^\circ\text{C})$.

8. If 335 g of water at 65.5°C loses 9750 J of heat, what is the final temperature of the water? Liquid water has a specific heat of $4.18 \text{ J}/(\text{g}\cdot^\circ\text{C})$.

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