

BHS Chemistry: Thermochemistry

Answers to selected problems

Ws #3 Specific Heat

1. 21000 cal or 2.1 kcal
2. 5.6 kcal
3. 25°C
4. 20.93 kJ
5. 27.46°C
6. 0.110 cal/g°C
7. 0.497 J/g°C
8. 30.5°C

Specific Heat Formulas	
Heat	$q=Cm\Delta T$
Change in temp	$\Delta T=q/(Cm)$

Ws #4 Thermochemical Equations and Stoichiometry

1. 1754 kJ released
2. 4.9×10^2 kJ provided
3. 79.6 kJ released
4. 155 kJ released
5. 2.79 kJ released
6. 147 kJ of heat transferred
7. 103.7 g C₈H₈
8. 254.8 L O₂

Ws #5 Phase Changes

1. 24.75 Kcal = 103.5 kJ
2. 1250 cal
3. 6.075 kcal
4. 146.5 kcal
5. icy water at 0°C.
6. 50 °C
7. 126.144 kcal
8. 35200 cal = 3.52×10^4 cal = 35.2 kcal
9. 100°C steamy liquid. Not enough energy provided to vaporize all 30 g H₂O
10. 57.5°C

Phase Changes of Water	
Solid (ice)	$q= 0.5 \text{ cal/g}^\circ\text{C}$
Melting	$q = 80 \text{ cal/g}$
Liquid	$q = 1 \text{ cal/g}^\circ\text{C}$
Vaporization	$q = 540 \text{ cal/g}$
Gas (steam)	$q = 0.4 \text{ cal/g}^\circ\text{C}$