

Thermochemistry Problems – Worksheet II

1. Convert from one unit to the other:
 - a. 1.69 Joules to calories
 - b. 0.3587 J to cal
 - c. 820.1 J to kilocalories
 - d. 68 calories to kilocalories
 - e. 423 calories to kilocalories
 - f. 20.0 calories to Joules
 - g. 252 cal to J
 - h. 2.45 kilocalories to calories
 - i. 556 kilocalories to cal
 - j. 6.78 kilocalories to kilojoules
2. Determine the temperature change when:
 - a. 20.0 g of water is heated from 16.8°C to 39.2°C.
 - b. 35.0 g of water is cooled from 56.5°C to 5.9°C.
 - c. 50.0 g of liquid water is heated from 0.0°C to 100.0°C
3. Determine the energy required (in Joules) when the temperature of 3.21 grams of water increase by 4.0°C while remaining liquid.
4. Determine the energy needed (in Joules) when 55.6 grams of water at 43.2°C is heated to 78.1°C.
5. Determine the energy required (in kilojoules) when cooling 456.2 grams of water at 89.2°C to a final temperature of 5.9°C.
6. Determine the energy required to:
 - a. melt 5.62 moles of ice at 0°C.
 - b. melt 74.5 grams of ice at 0°C.
 - c. boil 0.345 moles of water at 100.0°C.
 - d. boil 43.89 grams of water at 100.0°C.
7. Determine the energy change involved to:
 - a. Convert 16.2 grams of ice to liquid water.
 - b. Convert 5.8 grams of water to steam.
 - c. Convert 98.2 grams of water to ice.
 - d. Convert 52.6 grams of steam to water.
8. Determine the specific heat of a 150.0 gram object that requires 62.0 cal of energy to raise its temperature 12.0°C.
9. Determine the energy required to raise the temperature of 46.2 grams of aluminum from 35.8°C to 78.1°C. Specific heat capacity of aluminum is 0.089 J/g°C.
10. Determine the final temperature when 450.2 grams of aluminum at 95.2°C is placed in an insulated calorimeter with 60.0 grams of water at 10.0°C.