Thermodynamics Worksheet #2
SCH 4U1

1.   If the combustion of 13.50g of octane (C_8H_{18}) can warm 10.0 L of water from 20.00 °C to 35.447 °C, calculate the heat of combustion for octane.

2.   Determine the volume of water that can be warmed from 25.00 °C to 27.50 °C by the combustion of 12.5 kg of butane (C_4H_{10}) if the heat of combustion of butane is −2877.40 kJ.

3.   Given that the heat of combustion of ethyl alcohol (C_2H_5OH) is −1409.2 kJ/mol, determine the change in temperature of 4 L of water that has been warmed by the combustion of 5.00 g of ethyl alcohol.

4.   Using heats of formation found on page 799 of your text, determine the heat of combustion for pentane ($C_5H_{12}(l)$). Once you have found this, determine the final temperature of 80.0 L of water at 25.000 °C if 50.0 g of pentane is combusted.

5.   50.0 L of water is warmed by the combustion of 40.0 g of heptane ($C_7H_{16}(l)$) from an intial temperature of 22.000 °C to a final temperature of 31.187 °C. Use this information to determine the heat of combustion for heptane. Once you have completed this, use the heat summation method to determine the heat of formation for heptane.