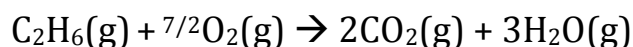


Thermochemistry Review

1. A reaction has a heat of reaction of +25 kJ/mol and an activation energy of 40 kJ/mol. What is the activation energy for the reverse reaction?
2. Determine the equation (including the enthalpy) of the formation of HF from its elements. Discuss the energy in and out. Draw the enthalpy diagram.
3. Determine the equation (including enthalpy) of the decomposition of liquid sulfur trioxide into sulfur dioxide and oxygen. How much energy is required to react 6.0g of sulfur trioxide?
4. Determine the molar enthalpy of combustion of ethane C₂H₆. Compare it with the molar enthalpy of combustion of gasoline C₈H₁₈(octane)
5. What mass of acetylene, C₂H₂(g), must be burned to release 1.00 MJ of energy.
6. When a 50.0 g sample of an unknown metal is heated from – 10.0°C to 60.0°C, 452 J of energy is absorbed. What is the specific heat capacity of the metal?
7. When 30.0g of propane is burned, it heats a copper pot (weighing 250g) filled with 1.5L of water from 25-35 degrees in 3 minutes. How efficient is this burner? What is the experimental molar enthalpy of combustion determined by the heating of the water?
8. The combustion of ethane can be expressed through the equation below:



Using Hess' law, prove that the formation reactions of ethane, carbon dioxide and water can be used to calculate the same reaction enthalpy as using **products - reactant**

