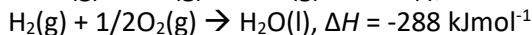
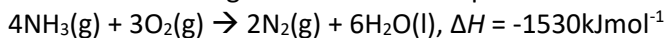


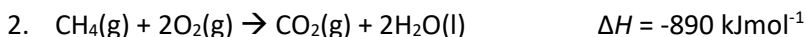
Friday worksheet 9 Hess' Law and enthalpy

Name .....

1. Given the following thermochemical equations



Calculate the enthalpy of formation of ammonia.



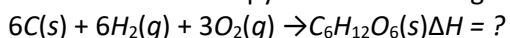
- a) Given the thermochemical equations above write balanced thermochemical equations for the :

i. formation of methane (formation of methane from its elements)

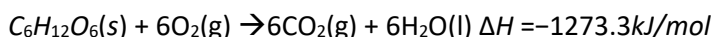
ii. formation of carbon monoxide (formation of CO from its elements)

iii. combustion of methane in limited oxygen to form carbon monoxide and liquid water.

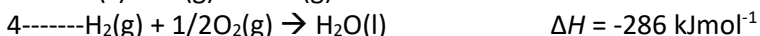
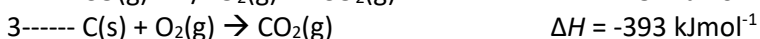
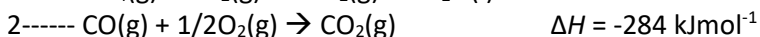
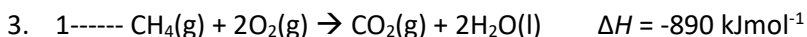
- b) Calculate the enthalpy of formation of glucose according to the equation below



Given



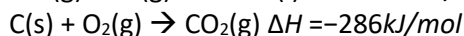
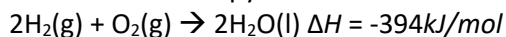
and the equations



4. When ethanol burns in oxygen under standard conditions  $\text{CO}_2$  and liquid water are produced.

a. Write a balanced thermochemical equation for the complete combustion of ethanol using information from the Data Booklet .

- b. Calculate the enthalpy of formation of ethanol given the equations below.



5. A 5.30 gram sample of pure solid ammonium nitrate is dissolved in 50.0 mL of pure water at 25.0 °C. If the temperature of the water was finally measured at 15.5°C calculate the  $\Delta H$  of the equation  $\text{NH}_4\text{NO}_3(\text{s}) \rightarrow \text{NH}_4^+(\text{aq}) + \text{NO}_3^-(\text{aq})$  .