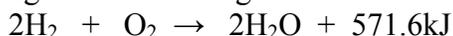


Name \_\_\_\_\_

## Energy of Reactions

- 1) How much heat will be transferred in the following reaction if 14.8 moles of hydrogen reacts with excess oxygen according to the following reaction:



- 2) How much heat would be released when 88.2g of iron reacts with excess oxygen according to the following equation:



- 3) How much heat would be absorbed when 1.82L of oxygen reacts with excess nitrogen at STP according to the following equation:



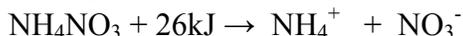
- 4) An exothermic combustion reaction with methane gas ( $\text{CH}_4$ ) and excess oxygen has a  $\Delta H_{\text{rxn}}$  of 890.3kJ. How much energy is released if 44.2g of methane are combusted?

- 5) How much energy is transferred when 9.20L of nitrogen gas at STP reacts with excess hydrogen according to the following equation? Is it endo or exothermic?



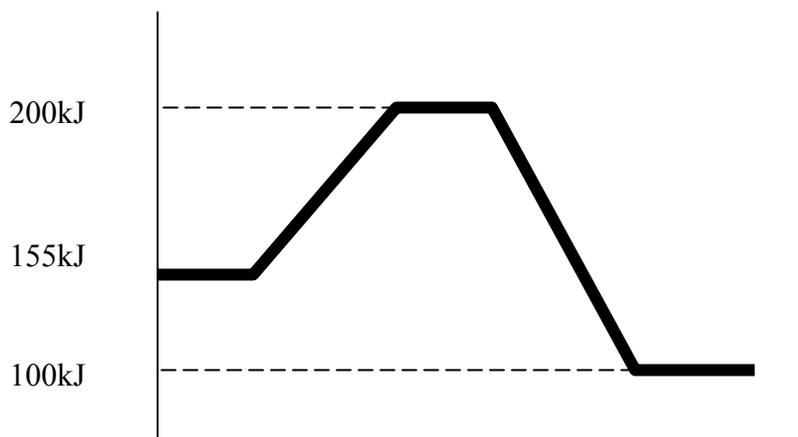
- 6) How much energy is released when 4.44g of  $\text{H}_2\text{O}_2$  decomposes into water and oxygen if the  $\Delta H_{\text{rxn}} = -196\text{kJ}$ ?

- 7) When ammonium nitrate dissolves in water, energy is transferred in the process. How much energy is transferred if 5.13g of ammonium nitrate is dissolved in water according to the following equation? Is the reaction endo or exothermic?



- 8) The combustion of ethanol ( $\text{C}_2\text{H}_5\text{OH}$ ) is an exothermic reaction that releases 1366.7kJ per mole of ethanol. How many grams of carbon dioxide are created if 12463kJ of energy are released?

- 9) In the following energy diagram label 1) both axis, 2) the activation energy, 3) whether it is endo or exothermic, and 4) how much energy was transferred.



- 10) Draw an energy diagram that represents an endothermic reaction where the energy of the reactants is 1200kJ, the activation energy is 300kJ, and the total energy absorbed is 250kJ.