Name	AP Chemistry
HW 1: Due 2/6/15 Co and clearly label all fi	mplete both free response questions. One will be graded. Show all work. Box nal answers
<ul><li>(a) Calculate the total press</li><li>(b) The temperature of the s</li><li>(i) The mole fracti</li><li>(ii) The partial pre</li></ul>	contains 19.73 g of $Cl_2(g)$ and 19.73 g of $F_2(g)$ .  are, in atm, of the gas mixture in the cylinder at 298 K.  gas mixture in the cylinder is increased to 370 K. Calculate each of the following.  on of $F_2(g)$ in the cylinder  stravel at a rate of 361 m/s at 370 K, at what rate will the fluorine molecules travel?
where a reaction occurs to p (d) Write the balanced equa	

2. Butane, $C_4H_{10}$ , is a hydrocarbon that is commonly used as fuel for in lighters.
(a) Write a balanced equation for the complete combustion of butane gas, which yields $CO_2(g)$ and $H_2O(l)$ . (b) Calculate the volume of air at 73°C and 1.00 atmospheres that is needed to burn completely 37.0 grams of butane. Assume that air is 21.0 percent $O_2$ by volume. (c) The heat of combustion of butane is -2,881.9 kJ/mol. Calculate the heat of formation, $\Delta H^{\circ}_{f}$ , of butane given that $\Delta H^{\circ}_{f}$ of $H_2O(l) = -285.3$ kJ/mol and $\Delta H^{\circ}_{f}$ of $CO_2(g) = -393.5$ kJ/mol. (d) If the enthalpy of vaporization for $H_2O(l)$ is 44.0 kJ/mol, what is $\Delta H^{\circ}$ for the combustion reaction above if $H_2O(g)$ is formed instead of $H_2O(l)$ ? (e) Assuming that all of the heat evolved in burning 73.0 grams of butane is transferred to 11.06 kilograms of water (specific heat = 4.184 J/g · K), calculate the increase in temperature of the water.
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