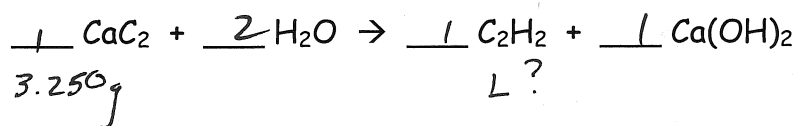


Honors Chemistry Stoichiometry Practice With Gasses

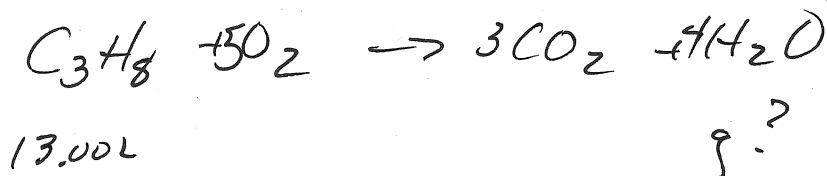
For sig figs., round all Periodic table masses to 100ths (.01) For all gasses assume STP!

- 1) Balance the following equation for the production of acetylene gas. How many liters of acetylene could be produced by combining 3.250 g of calcium carbide (CaC_2) with water?



$$\frac{3.250 \text{ g CaC}_2}{64.10 \text{ g}} \times \frac{1 \text{ mol CaC}_2}{1 \text{ mol CaC}_2} \times \frac{1 \text{ mol C}_2\text{H}_2}{1 \text{ mol CaC}_2} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = \boxed{1.14 \text{ L C}_2\text{H}_2}$$

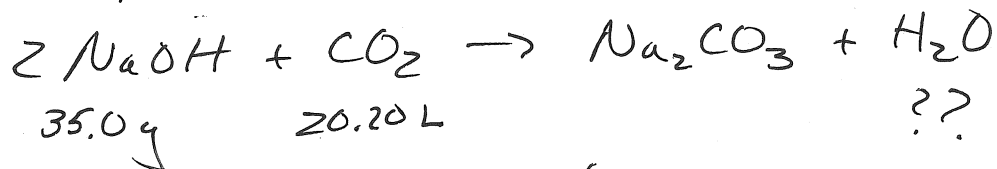
- 2) Combustion of 13.00 liters of propane produces how many grams of water?
If the water was steam, how many liters would it be at STP?



$$\frac{13.00 \text{ L C}_3\text{H}_8}{22.4 \text{ L}} \times \frac{1 \text{ mol C}_3\text{H}_8}{1 \text{ mol C}_3\text{H}_8} \times \frac{4 \text{ mol H}_2\text{O}}{1 \text{ mol C}_3\text{H}_8} \times \frac{18.02 \text{ g}}{1 \text{ mol}} = \boxed{41.8 \text{ g H}_2\text{O}}$$

$$\frac{13.00 \text{ L C}_3\text{H}_8}{22.4 \text{ L}} \times \frac{1 \text{ mol C}_3\text{H}_8}{1 \text{ mol C}_3\text{H}_8} \times \frac{4 \text{ mol H}_2\text{O}}{1 \text{ mol C}_3\text{H}_8} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = \boxed{52.0 \text{ L H}_2\text{O}}$$

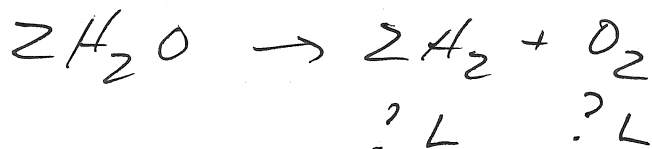
- 3) Sodium hydroxide reacts with 20.20 liters of carbon dioxide to produce sodium carbonate and water, how many grams of water can be formed when 35.0 g of sodium hydroxide is used?



$$\frac{20.20 \text{ L CO}_2}{22.4 \text{ L}} \times \frac{1 \text{ mol CO}_2}{1 \text{ mol CO}_2} \times \frac{1 \text{ mol H}_2\text{O}}{1 \text{ mol CO}_2} \times \frac{18.02 \text{ g}}{1 \text{ mol}} = 16.3 \text{ g H}_2\text{O}$$

$$\frac{35.0 \text{ g NaOH}}{40.00 \text{ g}} \times \frac{1 \text{ mol NaOH}}{2 \text{ mol NaOH}} \times \frac{1 \text{ mol H}_2\text{O}}{1 \text{ mol NaOH}} \times \frac{18.02 \text{ g}}{1 \text{ mol}} = \boxed{7.88 \text{ g H}_2\text{O}}$$

- 4) Decomposing water to get oxygen can be done at extremely high temperatures or with electricity. How many liters of oxygen and hydrogen can be produced from decomposing 1.000 liter of water? (Hint: you can use density)



$$\frac{1.000 \text{ L H}_2\text{O}}{1 \text{ L}} \times \frac{1 \text{ g}}{1 \text{ g}} \times \frac{1000 \text{ mL}}{1 \text{ L}} \times \frac{1 \text{ mol}}{18.02 \text{ g}} \times \frac{2 \text{ mol H}_2}{2 \text{ mol H}_2\text{O}} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 1240 \text{ L H}_2$$

$$\frac{1000. \text{ g H}_2\text{O}}{18.02 \text{ g}} \times \frac{1 \text{ mol O}_2}{2 \text{ mol H}_2\text{O}} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 622 \text{ L O}_2$$

$$\boxed{622 \text{ L O}_2}$$