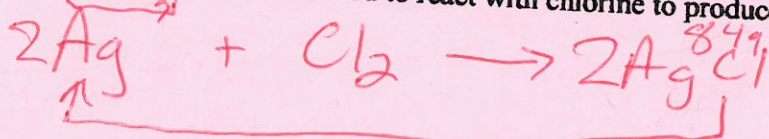


Chemical Quantities Worksheet

Name _____
Period _____ Date _____

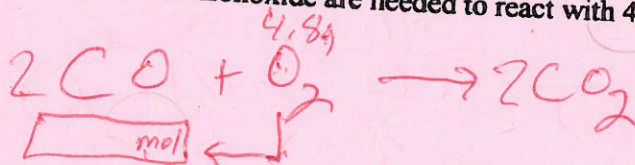
1200. Kg

1. Calculate the mass of silver needed to react with chlorine to produce 84 g of silver chloride.



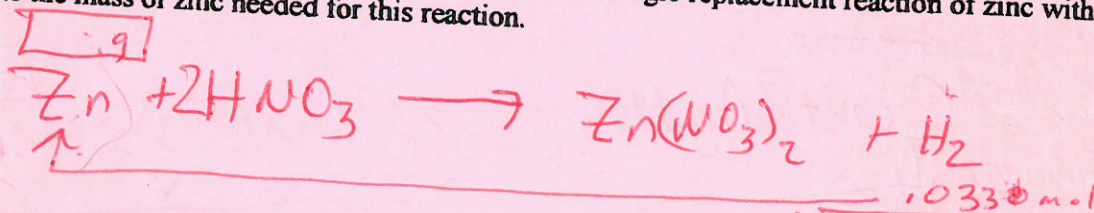
$$84\text{g} \times \frac{1\text{ mol}}{143.4\text{g}} \times \frac{2\text{ mol}}{2\text{ mol}} \times \frac{107.9\text{g}}{1\text{ mol}} = 63\text{g}$$

2. How many moles of carbon monoxide are needed to react with 4.8 g of oxygen gas to produce carbon dioxide?



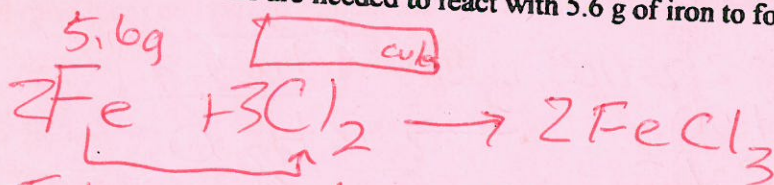
$$4.8\text{g} \times \frac{1\text{ mol}}{32\text{g}} \times \frac{2\text{ mol}}{1\text{ mol}} = 0.30\text{ mol}$$

3. There were .0330 moles of hydrogen gas produced from the single replacement reaction of zinc with nitric acid. Calculate the mass of zinc needed for this reaction.



$$.0330\text{ mol} \times \frac{1\text{ mol}}{1\text{ mol}} \times \frac{65.4\text{g}}{1\text{ mol}} = 2.16\text{g}$$

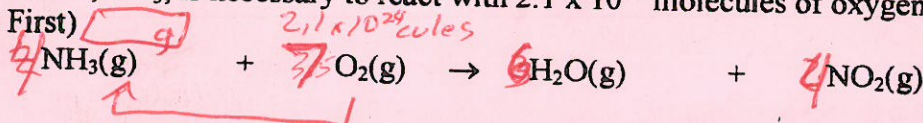
4. How many molecules of chlorine are needed to react with 5.6 g of iron to form iron (III) chloride.



$$5.6\text{g} \times \frac{1\text{ mol}}{55.8\text{g}} \times \frac{3\text{ mol}}{2\text{ mol}} \times \frac{6.022 \times 10^{23}\text{cules}}{1\text{ mol}}$$

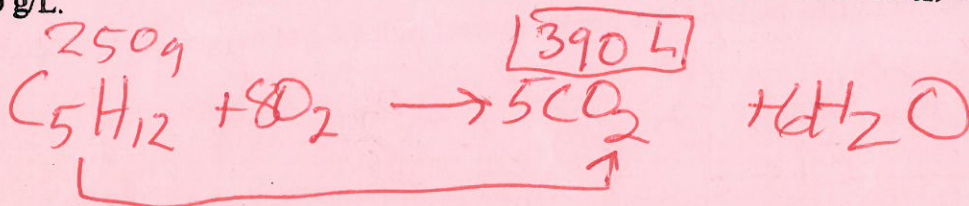
$$9.1 \times 10^{22}\text{cules}$$

5. What mass of ammonia, NH_3 , is necessary to react with 2.1×10^{24} molecules of oxygen in the following equation? (Balance First)



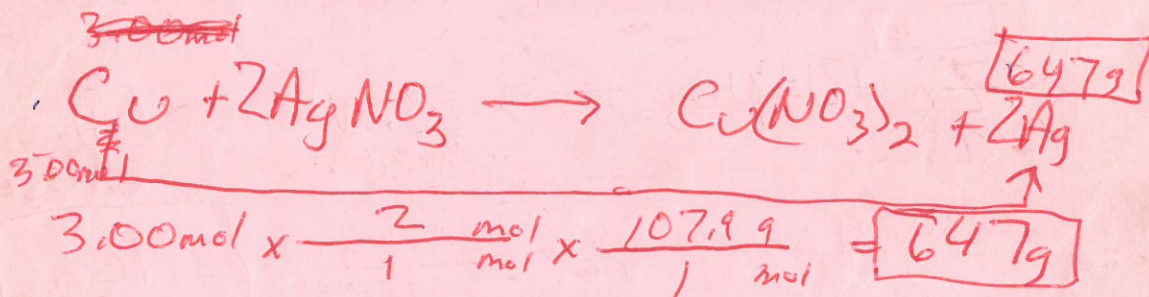
$$2.1 \times 10^{24} \text{ molecules} \times \frac{1 \text{ mol}}{6.022 \times 10^{23} \text{ molecules}} \times \frac{4 \text{ mol}}{3 \text{ mol}} \times \frac{17 \text{ g}}{1 \text{ mol}} = 34 \text{ g}$$

6. Calculate the volume of carbon dioxide produced when 250 g of pentane, C_5H_{12} , burns. Density of CO_2 equals 1.96 g/L.



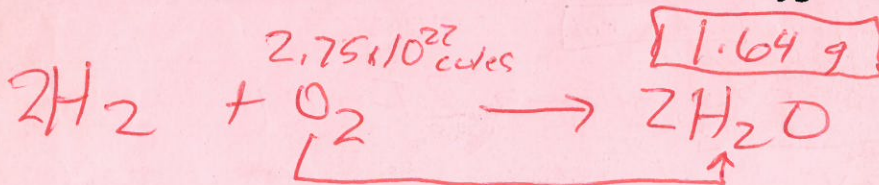
$$250 \text{ g} \times \frac{1 \text{ mol}}{72 \text{ g}} \times \frac{5 \text{ mol}}{1 \text{ mol}} \times \frac{44 \text{ g}}{1 \text{ mol}} \times \frac{1 \text{ L}}{1.96 \text{ g}} = 390 \text{ L}$$

7. What mass of silver can be produced from 3.00 mole of copper when reacted with silver nitrate? Copper (II) Nitrate is formed.



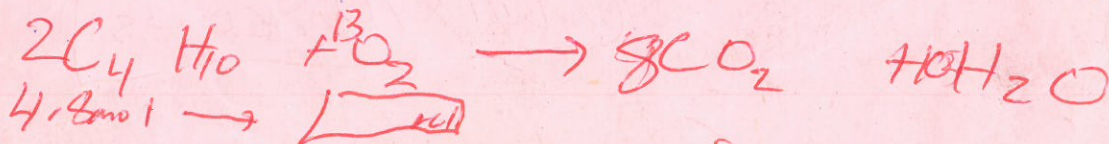
$$3.00 \text{ mol} \times \frac{2 \text{ mol}}{1 \text{ mol}} \times \frac{107.9 \text{ g}}{1 \text{ mol}} = 647 \text{ g}$$

8. Calculate the mass of water produced when 2.75×10^{22} molecules of oxygen react with hydrogen gas.



$$2.75 \times 10^{22} \text{ molecules} \times \frac{1 \text{ mol}}{6.022 \times 10^{23} \text{ molecules}} \times \frac{2 \text{ mol}}{1 \text{ mol}} \times \frac{18 \text{ g}}{1 \text{ mol}} = 1.64 \text{ g}$$

9. How many moles of oxygen are required to burn 4.8 mole of butane, C_4H_{10} , completely?



$$4.8 \text{ mol} \times \frac{13 \text{ mol}}{2 \text{ mol}} = 31 \text{ mol}$$