Problems – SHOW ALL WORK CLEARLY

1. What is the mass (in grams) of 2.6 moles of CO_2? $12.01 + 2 \times 16 = 44.01$

$$\frac{2.6 \text{ mol}}{} \bigg| \frac{44.01 \text{ g}}{\text{mol}} = 114 = \boxed{110 \text{ g}}$$

2. How many moles of PCl_5 are in 175 g of PCl_5? $30.97 + 5 \times 35.45 = 208.2$

$$\frac{175 \text{ g}}{} \bigg| \frac{1 \text{ mol}}{208.2} = \boxed{.841 \text{ mol}}$$

Questions 3-5 Use the equation: $4 \text{ Al} + 3 \text{ O}_2 \rightarrow 2 \text{ Al}_2\text{O}_3$

3. How many moles of Al_2O_3 can be produced from 7.0 mol of O_2?

$$\frac{7 \text{ mol } O_2}{} \bigg| \frac{2 \text{ Al}_2 O_3}{3 \text{ O}_2} = \boxed{4.7 \text{ mol}}$$

4. How many grams of Al do you need to make 2.50 mol of Al_2O_3?

$$\frac{2.5 \text{ mol Al}_2O_3}{} \bigg| \frac{4 \text{ mol Al}}{2 \text{ mol Al}_2O_3} \bigg| \frac{26.98 \text{ g}}{1 \text{ mol Al}} = \boxed{135 \text{ g}}$$

5. How many grams of O_2 will react with 125 g of Al?

$$\frac{125 \text{ g Al}}{} \bigg| \frac{1 \text{ mol Al}}{26.98 \text{ g}} \bigg| \frac{3 \text{ mol } O_2}{4 \text{ mol Al}} \bigg| \frac{32 \text{ g } O_2}{1 \text{ mol } O_2} = \boxed{111 \text{ g}}$$

Question 6 Use the equation: $2 \text{ Fe} + 3 \text{ H}_2\text{O} \rightarrow \text{Fe}_2\text{O}_3 + 3 \text{ H}_2$

6. How many grams of Fe_2O_3 can be made from 12.5 g of Fe? $2 \times 55.85 + 3 \times 16 =$

$$\frac{12.5 \text{ g Fe}}{} \bigg| \frac{1 \text{ mol Fe}}{55.85 \text{ g}} \bigg| \frac{1 \text{ Fe}_2O_3}{2 \text{ Fe}} \bigg| \frac{159.7 \text{ g Fe}_2O_3}{1 \text{ mol}} = \boxed{17.9 \text{ g}}$$