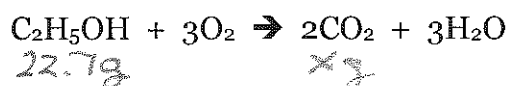


Worksheet #6

Stoichiometry

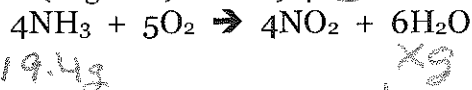
SHOW ALL WORK AND STEPS!!!!

1. In the following combustion reaction, how many ^ggrams of CO₂ is produced when 22.7 g of C₂H₅OH is burned?



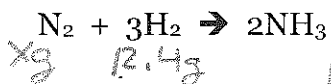
$$22.7\text{g C}_2\text{H}_5\text{OH} \times \frac{1\text{mole C}_2\text{H}_5\text{OH}}{46.07\text{g C}_2\text{H}_5\text{OH}} \times \frac{2\text{mole CO}_2}{1\text{mole C}_2\text{H}_5\text{OH}} \times \frac{44.01\text{g CO}_2}{1\text{mole CO}_2} = 43.4\text{g CO}_2$$

2. How much water is produced (in grams) when 19.4 ^ggrams of NH₃ is reacted?



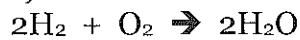
$$19.4\text{g NH}_3 \times \frac{1\text{mole NH}_3}{17.04\text{g NH}_3} \times \frac{6\text{mole H}_2\text{O}}{4\text{mole NH}_3} \times \frac{18.02\text{g H}_2\text{O}}{1\text{mole H}_2\text{O}} = 30.8\text{g H}_2\text{O}$$

3. How much N₂ in grams is needed to react completely with 12.4 grams of H₂ in the following reaction?



$$12.4\text{g H}_2 \times \frac{1\text{mole H}_2}{2.02\text{g H}_2} \times \frac{1\text{mole N}_2}{3\text{mole H}_2} \times \frac{28.02\text{g N}_2}{1\text{mole N}_2} = 57.3\text{g N}_2$$

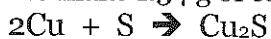
4. How much oxygen (in grams) is needed to react completely with 12.5 g of hydrogen?



$$12.5\text{g H}_2 \times \frac{1\text{mole H}_2}{2.02\text{g H}_2} \times \frac{1\text{mole O}_2}{2\text{mole H}_2} \times \frac{32.00\text{g O}_2}{1\text{mole O}_2} = 99.0\text{g O}_2$$

(continued on next page)

5. How much copper is needed to make 1.34 g of copper sulfide in a crucible?



$$X\text{g} \quad 1.34\text{g}$$

$$1.34\text{g Cu}_2\text{S} \times \frac{1\text{ mole Cu}_2\text{S}}{159.1\text{g Cu}_2\text{S}} \times \frac{2\text{ mole Cu}}{1\text{ mole Cu}_2\text{S}} \times \frac{63.55\text{g Cu}}{1\text{ mole Cu}} = 1.07\text{g Cu}$$

6. When 3.17 g of $\text{Ca}(\text{ClO}_3)_2$ decomposes, how many liters of oxygen are formed?



$$3.17\text{g} \quad X\text{g}$$

$$3.17\text{g Ca}(\text{ClO}_3)_2 \times \frac{1\text{ mole Ca}(\text{ClO}_3)_2}{206.98\text{g Ca}(\text{ClO}_3)_2} \times \frac{3\text{ mole O}_2}{1\text{ mole Ca}(\text{ClO}_3)_2} \times \frac{32.00\text{g O}_2}{1\text{ mole O}_2} = 1.47\text{g O}_2$$

7. How many iron particles are formed when 43.7 g of iron oxide react with hydrogen?



$$43.7\text{g} \quad X\text{part.}$$

$$43.7\text{g Fe}_2\text{O}_3 \times \frac{1\text{ mole Fe}_2\text{O}_3}{159.70\text{g Fe}_2\text{O}_3} \times \frac{2\text{ mole Fe}}{1\text{ mole Fe}_2\text{O}_3} \times \frac{6.022 \times 10^{23}\text{ part Fe}}{1\text{ mole Fe}} = 3.29 \times 10^{23}\text{ part Fe}$$

8. How many particles of CO_2 can be produced from 96.4 g of CS_2 ?



$$96.4\text{g} \quad X\text{part.}$$

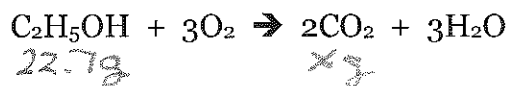
$$96.4\text{g CS}_2 \times \frac{1\text{ mole CS}_2}{76.13\text{g CS}_2} \times \frac{1\text{ mole CO}_2}{1\text{ mole CS}_2} \times \frac{6.022 \times 10^{23}\text{ part CO}_2}{1\text{ mole CO}_2} = 7.62 \times 10^{23}\text{ part CO}_2$$

Worksheet #6

Stoichiometry

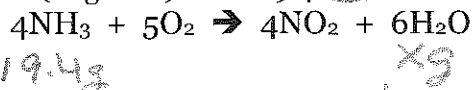
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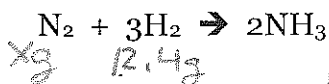
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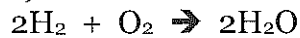
$$19.4\text{g NH}_3 \times \frac{1\text{mole NH}_3}{17.04\text{g NH}_3} \times \frac{6\text{mole H}_2\text{O}}{4\text{mole NH}_3} \times \frac{18.02\text{g H}_2\text{O}}{1\text{mole H}_2\text{O}} = 30.8\text{g H}_2\text{O}$$

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12.5g xg

$$12.5\text{g H}_2 \times \frac{1\text{mole H}_2}{2.02\text{g H}_2} \times \frac{1\text{mole O}_2}{2\text{mole H}_2} \times \frac{32.00\text{g O}_2}{1\text{mole O}_2} = 99.0\text{g O}_2$$

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