

Balancing Equations and Simple Stoichiometry

Balance the following equations:

- 1) $1 \text{ N}_2 + 3 \text{ F}_2 \rightarrow 2 \text{ NF}_3$
- 2) $2 \text{ C}_6\text{H}_{10} + 17 \text{ O}_2 \rightarrow 12 \text{ CO}_2 + 10 \text{ H}_2\text{O}$
- 3) $1 \text{ HBr} + 1 \text{ KHCO}_3 \rightarrow 1 \text{ H}_2\text{O} + 1 \text{ KBr} + 1 \text{ CO}_2$
- 4) $2 \text{ GaBr}_3 + 3 \text{ Na}_2\text{SO}_3 \rightarrow 1 \text{ Ga}_2(\text{SO}_3)_3 + 6 \text{ NaBr}$
- 5) $3 \text{ SnO} + 2 \text{ NF}_3 \rightarrow 3 \text{ SnF}_2 + 1 \text{ N}_2\text{O}_3$

Using the equation from problem 2 above, answer the following questions:

- 6) If I do this reaction with 35 grams of C_6H_{10} and 45 grams of oxygen, how many grams of carbon dioxide will be formed?
When you do this calculation for 35 grams of C_6H_{10} , you find that 113 grams of CO_2 will be formed. When you do the calculation for 45 grams of oxygen, you find that 43.7 grams of CO_2 will be formed. Because 43.7 grams is the smaller number, oxygen is the limiting reagent, forming 43.7 grams of product.
- 7) What is the limiting reagent for problem 6? **oxygen**
- 8) How much of the excess reagent is left over after the reaction from problem 6 is finished?
21.5 grams of C_6H_{10} will be left over.
- 9) If 35 grams of carbon dioxide are actually formed from the reaction in problem 6, what is the percent yield of this reaction?
80.1%