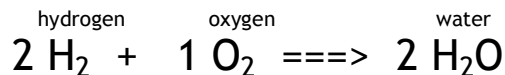
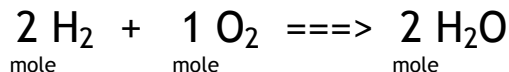


Aim: How do we solve mole-mole problems?



How many moles of O_2 are needed to react with 5 moles of H_2 ?

The coefficients represent moles.



To set up the proportion, just write the # of moles given in the problem under the coefficients of each substance .

$$\frac{2 \text{ H}_2 + 1 \text{ O}_2}{5 \quad x} \quad \frac{2}{5} = \frac{1}{x} \quad \begin{array}{l} 2x=5 \\ x=2.5 \text{ moles} \end{array}$$

How many moles of water are produced when 3 moles of hydrogen react completely?

$$\frac{2 \text{ H}_2}{3} \implies \frac{2 \text{ H}_2\text{O}}{x} \quad \frac{2}{3} = \frac{2}{x} \quad x = 3 \text{ moles}$$

GO TO HANDOUT: mole-mole problems

STOICHIOMETRY: MOLE-MOLE PROBLEMS

nitrogen hydrogen ammonia

1. $\boxed{1} \text{N}_2 + \boxed{3} \text{H}_2 \rightarrow \boxed{2} \text{NH}_3$
How many moles of hydrogen are needed to completely react with two moles of nitrogen?

$$\frac{3}{x} = \frac{1}{2} \quad x = 6 \text{ mole H}_2$$

pot'chlorate pot'chloride oxygen

2. $\boxed{2} \text{KClO}_3 \rightarrow \boxed{2} \text{KCl} + \boxed{3} \text{O}_2$
How many moles of oxygen are produced by the decomposition of six moles of potassium chlorate?

$$\frac{3}{x} = \frac{2}{6} \quad 2x = 18 \quad x = 9 \text{ mole O}_2$$