

Stoichiometry Walk-Through

Some examples using the mole highway



You start with 25.00g of N₂ - How much H₂ do you need?

Grams A → Moles A <i>Use molar mass A</i>	$\frac{25.00\text{g N}_2}{28.01 \text{ g N}_2} \times 1 \text{ mol N}_2$ $= 0.8925\text{mol N}_2$
Moles A → Moles B <i>Use mole ratio B/A</i>	$\frac{0.8925\text{mol N}_2}{1 \text{ mol N}_2} \times 3 \text{ mol H}_2$ $= 2.678 \text{ mol H}_2$
Grams A → Moles B <i>Use molar mass A, then mole ratio B/A</i>	$\frac{25.00\text{g N}_2}{28.01 \text{ g N}_2} \times 1 \text{ mol N}_2 \times \frac{3 \text{ mol H}_2}{1 \text{ mol N}_2}$ $= 2.678 \text{ mol H}_2$
Grams A → Grams B <i>Use molar mass A, then mole ratio B/A, then molar mass B</i>	$\frac{25.00\text{g N}_2}{28.01\text{g N}_2} \times 1\text{mol N}_2 \times \frac{3\text{mol H}_2}{1\text{mol N}_2} \times \frac{2.02\text{g H}_2}{1\text{mol H}_2}$ $= 5.409 \text{ mol H}_2$
Grams A → Molecules B <i>Use molar mass A, then mole ratio B/A, then Avogadro's # B</i>	$\frac{25.00\text{g N}_2}{28.01\text{g N}_2} \times 1\text{mol N}_2 \times \frac{3\text{mol H}_2}{1\text{mol N}_2} \times \frac{6.02 \times 10^{23} \text{ molec. H}_2}{1\text{mol H}_2}$ $= 1.612 \times 10^{24} \text{ molecules H}_2$

These are not all the combinations of routes on the mole highway, just some examples of possible routes