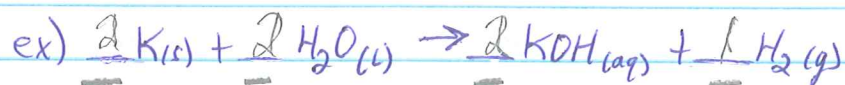


11-2 Notes - Mole-to-Mole Stoich.

* Effective recipes require balanced equations

Mole-to-Mole conversions using Stoich.



* How much $\text{H}_2\text{(g)}$ is produced if only 0.04 mol of K(s) is used?

- since known value is in moles and we want to solve for moles of H_2 , we use mole-to-mole conversion

- we will use the mole ratios we learned yesterday to solve this, but only 1 of them is needed. Which one?

0.04 mol K

- 2 mol H_2 to 1 mol K or $\frac{1 \text{ mol H}_2}{2 \text{ mol K}}$

Use this equation: $\boxed{\text{moles of known} \times \frac{\text{moles of unknown}}{\text{moles of known}} = \text{moles of unknown}}$

- for problem above - $0.04 \text{ mol K} \times \frac{1 \text{ mol H}_2}{2 \text{ mol K}} = 0.02 \text{ mol H}_2$ ($0.04 \times \frac{1}{2}$)

ex) $\underline{4} \text{ Cr} + \underline{3} \text{ O}_2 \rightarrow \underline{2} \text{ Cr}_2\text{O}_3$ - How much Cr_2O_3 is produced, when $\text{Cr} = 4.58 \text{ mol}$? * ratio needed = $\frac{2 \text{ mol Cr}_2\text{O}_3}{4 \text{ mol Cr}}$

- use formula: $4.58 \text{ mol Cr} \times \frac{2 \text{ mol Cr}_2\text{O}_3}{4 \text{ mol Cr}} = 2.29 \text{ mol Cr}_2\text{O}_3$ ($4.58 \times \frac{2}{4}$)

ex) $\underline{2} \text{ LiOH} + \underline{1} \text{ CO}_2 \rightarrow \underline{1} \text{ Li}_2\text{CO}_3 + \underline{1} \text{ H}_2\text{O}$ - How much CO_2 produced when $\text{LiOH} = 42.0 \text{ mol}$?

* ratio needed = $\frac{1 \text{ mol CO}_2}{2 \text{ mol LiOH}}$

- Use formula: $42.0 \text{ mol LiOH} \times \frac{1 \text{ mol CO}_2}{2 \text{ mol LiOH}} = 21.0 \text{ mol CO}_2$ ($42 \times \frac{1}{2}$)