    - According to the equation, 2 moles of H_2 react with 1 mole of O_2.
2. **Calculate Product from Each Reactant**:
    - From 3 moles of H_2:
        - 3 moles H_2 can produce $3/2 \times 2 = 3$ moles of H_2O
    - From 1 mole of O_2:
        - 1 mole O_2 can produce $1 \times 2 = 2$ moles of H_2O.
3. **Identify Limiting Reactant**:
    - H_2 can produce 3 moles of H_2O, while O_2 can produce only 2 moles.
    - **O_2 is the limiting reactant** because it produces the least amount of product.

Excess Reactant

- The reactant that is left over after the reaction is called the excess reactant.
- To find how much is left, calculate how much of the excess reactant was used.

Summary

- **Limiting Reactant**: The substance that runs out first and limits product formation.
- **Identifying**: Use balanced equations, mole calculations, and product comparisons.
- **Excess Reactant**: The reactant that remains after the limiting reactant is used up.