

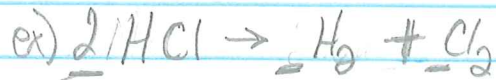
①

11.2 Notes - mole to mass conversion

* Start w/ # of moles of a substance

- Solving for mass of another substance in equation

Follow the following steps:



given: 1.3 mol H₂ → ? g Cl₂

* Find the mole ratio between H₂ & Cl₂
→ cancel out mol of known

$$\frac{1 \text{ mol Cl}_2}{1 \text{ mol H}_2}$$

* Multiply moles of known by ratio

$$\underline{1.3 \text{ mol H}_2} \times \frac{1 \text{ mol Cl}_2}{1 \text{ mol H}_2} = 1.3 \text{ mol Cl}_2$$

* Find the molar mass of Cl₂ (Cl = 2 × 35.5 g/mol = 71.0 g/mol)

$$1.3 \text{ mol Cl}_2 \times \frac{71.0 \text{ g}}{1 \text{ mol}} = \boxed{92.3 \text{ g Cl}_2}$$

Another example:

given: 2.3 mol HCl → ? g H₂

$$\text{mole ratio} = \frac{1 \text{ mol H}_2}{2 \text{ mol HCl}}$$

$$2.3 \text{ mol HCl} \times \frac{1 \text{ mol H}_2}{2 \text{ mol HCl}} = 1.15 \text{ mol H}_2$$

* Multiply by molar mass of H₂ (H = 2 × 1.0) = 2.0 g/mol

$$1.15 \text{ mol H}_2 \times \frac{2.0 \text{ g}}{1 \text{ mol}} = \boxed{2.3 \text{ g H}_2}$$

②



given: 1.72 mol $\text{Br}_2 \rightarrow ? \text{ g CuBr}_2$

$$\text{mole ratio needed} = \frac{1 \text{ CuBr}_2}{1 \text{ Br}_2}$$

* Multiply to get mol. CuBr_2 : $1.72 \text{ mol Br}_2 \times \frac{1 \text{ mol CuBr}_2}{1 \text{ mol Br}_2}$

$$= 1.72 \text{ mol CuBr}_2$$

* Multiply by molar mass

{	Cu - 1 × 63.5
	Br - 2 × 79.9

$$223.3 \text{ g/mol}$$

$$1.72 \text{ mol CuBr}_2 \times \frac{223.3 \text{ g}}{1 \text{ mol}} = \boxed{384.1 \text{ g CuBr}_2}$$