

STOIKIOMETRI

1 mol = $6,02 \times 10^{23}$ (Avogadro)

➤ **Berapa jumlah mol dari 2,4 gram Mg ?**

Jawab: (Ar Mg = 24)

$$\text{mol} = \frac{\text{g}}{\text{Ar}} = \frac{2,4}{24} = 0,1 \text{ mol}$$

➤ **Berapa jumlah mol dari 1,2 gram MgSO_4 ?**

Jawab: (Ar Mg = 24, S = 32, O = 16)

$$\text{mol} = \frac{\text{g}}{\text{Mr}} = \frac{1,2}{(24 \times 1) + (32 \times 1) + (16 \times 4)} = 0,01 \text{ mol}$$

Konsentrasi Larutan

$$m = \frac{\text{mol}}{\text{kg}_p} = \frac{\text{mol}}{\text{g}_p} \times 1000 \text{ g/kg}$$

$$M = \frac{\text{mol}}{\text{L}} = \frac{\text{mol}}{\text{mL}} \times 1000 \text{ mL/L}$$

$$N = \frac{\text{g}_{ek}}{\text{L}} = \frac{\text{g}}{\text{L}} = \frac{n \cdot \text{g}}{\text{L}} = \frac{\text{Mr}}{\text{L}} = \frac{n \cdot \text{mol}}{\text{L}} = n \cdot M$$

- **1,2 g MgSO₄ dilarutkan ke dalam 100 g air. Berapa molal konsentrasinya ?**

$$m = \frac{\text{mol}}{\text{g}_p} \times 1000 \text{ g/kg} = \frac{1,2 / 120}{100} \times 1000 = 0,1 \text{ m}$$

- **1,2 g MgSO₄ dilarutkan ke dalam air sampai volumenya menjadi 100 mL.**
- **Berapa molar konsentrasi larutannya ?**
 - **Berapa normal konsentrasi larutannya ?**

$$M = \frac{\frac{g}{\text{mL}}}{\text{Mr}} \times 1000 \text{ mL/L} = \frac{1,2}{100} \times 1000 = 0,1 \text{ M}$$



(jadi n = 2)

$$N = \frac{\frac{n \times g}{\text{mL}}}{\text{Mr}} \times 1000 \text{ mL/L} = \frac{2 \times 1,2}{100} \times 1000 = 0,2 \text{ N}$$

Pengenceran

$$\text{mol}_1 = \text{mol}_2$$

$$M_1 \cdot V_1 = M_2 \cdot V_2$$

$$N_1 \cdot V_1 = N_2 \cdot V_2$$

- **20 mL MgSO₄ 0,01 M ditambah air sampai 100 mL. Menjadi berapa konsentrasinya ?**

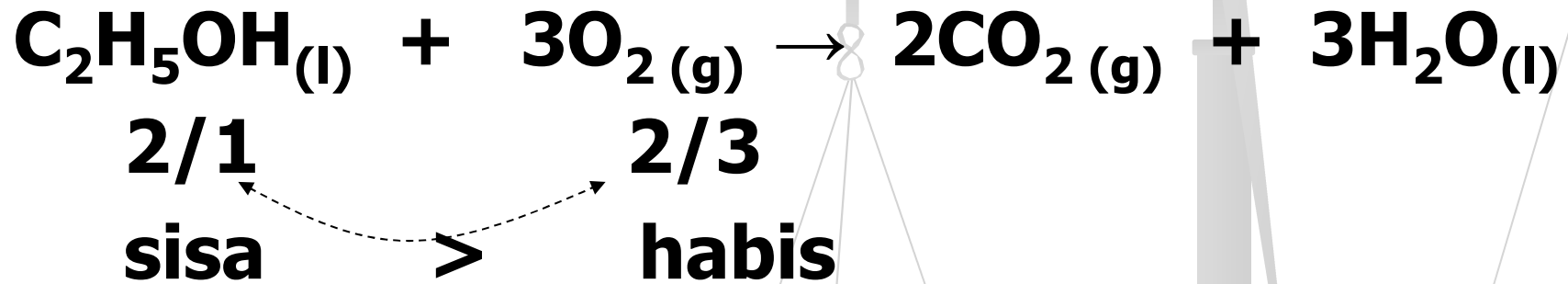
Jawab: $M_1 \times \text{mL}_1 = M_2 \times \text{mL}_2$

$$M_2 = \frac{M_1 \times \text{mL}_1}{\text{mL}_2} = \frac{0,01 \times 20}{100} = 0,002 \text{ M}$$

Pembatas Reaksi

- 2 mol C_2H_5OH direaksikan dengan 2 mol O_2 . Berapa mol CO_2 yang dihasilkan?

Jawab:



R: $(1/3) \times 2 \text{ mol} = 0,67 \text{ mol}$ 2 mol $(2/3) \times 2 \text{ mol} = 1,33 \text{ mol}$

Sisa = $2 - 0,67$
= 1,33 mol

Persen Hasil

- Pada percobaan pembakaran CH_4 dihasilkan 0,5 gram air. Jika menurut perhitungan teori dihasilkan 0,6 gram air, maka berapa % hasilnya ?

Jawab:

$$\begin{aligned} \text{Persen hasil} &= \frac{\text{hasil nyata}}{\text{hasil teori}} \times 100 \% \\ &= \frac{0,5}{0,6} \times 100 \% = 83,3 \% \end{aligned}$$