

Dilution Problems

Example 1:

STOCK

DILUTE

HCl
14M

HCl
2M
250mL

$$\begin{aligned} \text{mol} &= \text{mol} \\ C_1V_1 &= C_2V_2 \end{aligned}$$

$$\begin{aligned} C_1V_1 &= C_2V_2 \\ (14M)V_1 &= 2M(250mL) \end{aligned}$$

$$V_1 = \frac{500}{14} mL$$

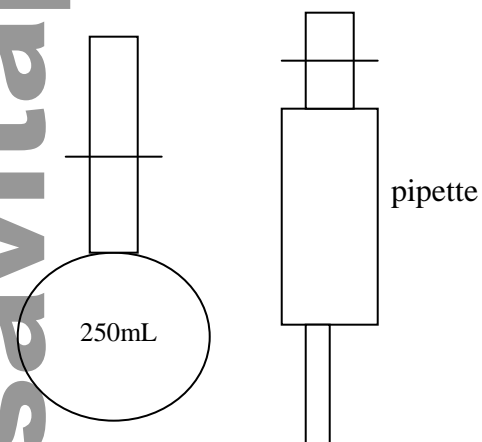
$$= 35.7 mL$$

$$= 36 mL \text{ of } 14M \text{ HCl}$$

Acid → water

(A&W)

Suction pump



- 1 – fill about half the volumetric flask
- 2 – pipette the amount of acid
- 3 – add a small amount of water until correct
- 4 – stir & shake to make sure the concentration is even throughout

Examples of Dilution Problems

Example 2

H₂O₂ → 30% → 250mL

Dilute to 5% → 10mL

$$\begin{aligned} C_1V_1 &= C_2V_2 \\ (30\%)V_1 &= (5\%)(10mL) \end{aligned}$$

$$V_1 = \frac{50}{30}$$

$$= 1.67 mL$$

$$= 1.7 mL \text{ of } 30\% \text{ H}_2\text{O}_2$$

Example 3

3.60 g Methanoic acid HCOOH 100mL

10mL
250mL

$$\begin{aligned} \text{moles} &= \frac{\text{mass}}{M_R} \\ &= \frac{3.6g}{46g/mol} \\ &= 0.07826 \end{aligned}$$

$$\begin{aligned} c &= \frac{n}{v} \\ c &= \frac{(0.07826)}{(0.1)} \\ &= 0.7826g/mol \end{aligned}$$

$$\begin{aligned} C_1V_1 &= C_2V_2 \\ (0.7826)(10) &= C_2(250) \\ 0.0313 &= C_2 \end{aligned}$$