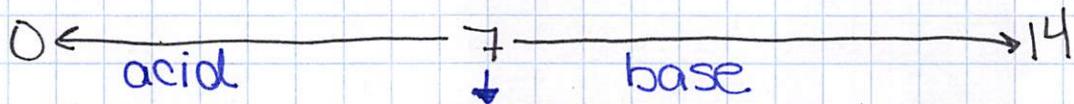




pH

- power of hydrogen (ion)
- refers to how strong an acid or base is



- the lower the pH, the stronger the acid.
 - the lower the pH, the higher concentration of the H^{1+}
 - the higher the pH, the stronger the base
 - the higher the pH, the higher the concentration of OH^{1-}
- the concentrations of H^{1+} & OH^{1-} are equal.

Ex) pure H_2O , pH = 7 neutral
 sea water, pH = 8 base
 tomato juice, pH = 4 acid
 baking soda, pH = 9 base
 bleach, pH = 13 base

lemon juice, pH = 2 acid
 soda, pH = 3 acid
 soap, pH = 12 base
 battery acid, pH = 0 acid

Neutralization

$$\text{M}_A \text{V}_A = \text{M}_B \text{V}_B$$

Ex) What volume of 3.00 M HClO_3 is needed to neutralize 750. mL of 4.50 M KOH?

$$\text{M}_A = 3.00 \text{ M}$$

$$\text{V}_A = ?$$

$$\text{M}_B = 4.50 \text{ M}$$

$$\begin{aligned} \text{V}_B &= 750. \text{ mL} \\ &= .750 \text{ L} \end{aligned}$$

$$\frac{(3.00 \text{ M}) \text{ V}_A}{3.00 \text{ M}} = \frac{(4.50 \text{ M})(.750 \text{ L})}{3.00 \text{ M}}$$

$$\therefore \text{V}_A = 1.13 \text{ L}$$

Ex) What volume of 12.0 M LiOH is needed to neutralize 55.0 mL of 3.00 M HNO_3 ?

$$\text{M}_A = 3.00 \text{ M}$$

$$\text{V}_A = 55.0 \text{ mL} = .0550 \text{ L}$$

$$\text{M}_B = 12.0 \text{ M}$$

$$\text{V}_B = ?$$

$$\frac{(3.00 \text{ M})(.0550 \text{ L})}{12.0 \text{ M}} = \frac{(12.0 \text{ M}) \text{ V}_B}{12.0 \text{ M}}$$

$$\therefore .0138 \text{ L} = \text{V}_B$$