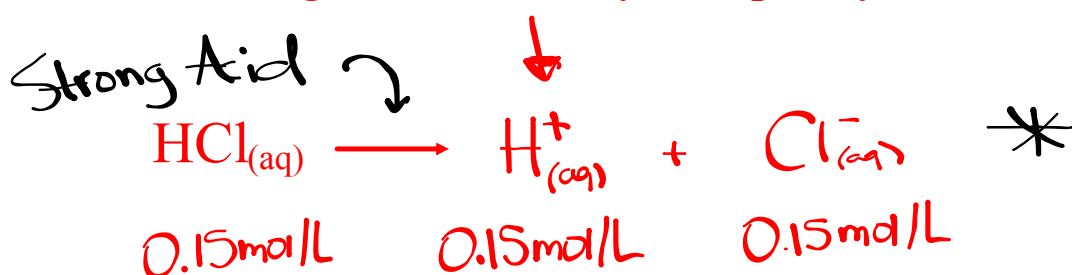


## Strong Acids

Calculate the concentration of the hydroxide ions, pH and pOH of a 0.15 mol/L solution of hydrochloric acid at 25°C.

**\*Strong acids will always completely ionize\***



$$K_w = [\text{H}^+][\text{OH}^-]$$

$$[\text{OH}^-] = \frac{K_w}{[\text{H}^+]}$$

$$[\text{OH}^-] = \frac{1.0 \times 10^{-14}}{0.15}$$

$$[\text{OH}^-] = 6.7 \times 10^{-14} \text{ M}$$

$$\text{pOH} = -\log[\text{OH}^-]$$

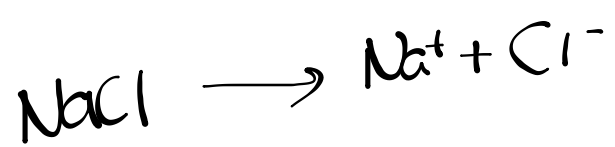
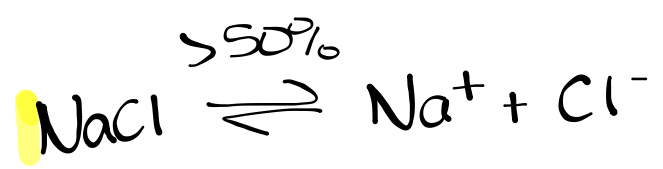
$$\text{pOH} = -\log[6.7 \times 10^{-14}]$$

$$\text{pOH} = 13.17$$

$$\text{pH} + \text{pOH} = 14.00$$

$$\text{pH} = 14.00 - 13.17$$

$$\text{pH} = 0.83$$



## ORANGES

$$[H^+] = 5.5 \times 10^{-3} M$$

$$[OH^-] = ?$$

$$pH = ?$$

$$pOH = ?$$

$$pH = -\log[H^+]$$

$$pH = 2.26$$

ASPARAGUS

$$pOH = 5.6$$

$$[OH^-] = 10^{-pOH}$$

$$[OH^-] = 10^{-5.6}$$

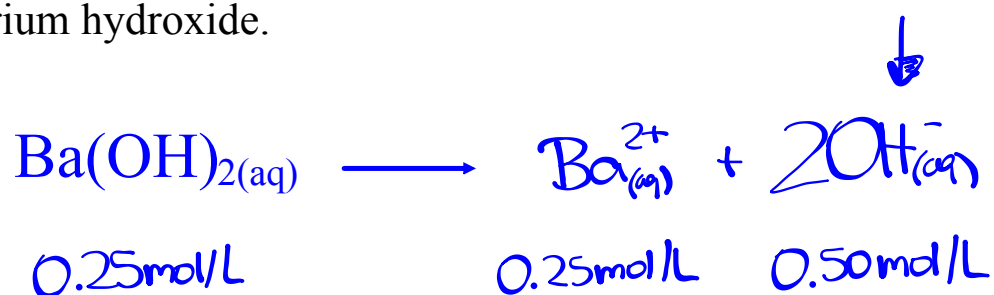
$$[OH^-] = 3 \times 10^{-6} M$$

$$10^x$$

$$10^{\sim}$$

## Strong Bases (Ionic Hydroxides)

Calculate the hydrogen ion concentration in a 0.25 mol/L solution of barium hydroxide.



$$K_w = [\text{H}^+][\text{OH}^-]$$

$$[\text{H}^+] = \frac{K_w}{[\text{OH}^-]}$$

$$[\text{H}^+] = \frac{1.0 \times 10^{-14}}{0.50\text{mol/L}}$$

$$[\text{H}^+] = 2.0 \times 10^{-14}\text{M}$$

# Worksheet #2-4

