

# Worksheet

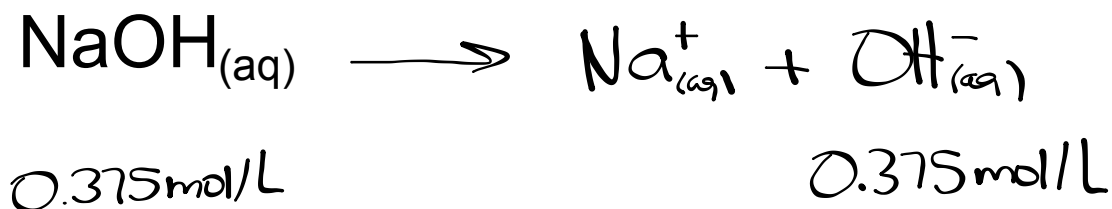
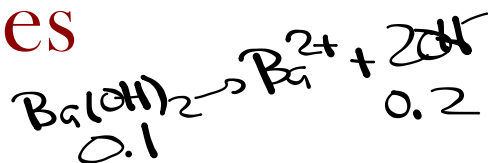
# Strong Acids



# Weak Acids



## Strong Bases



$$\text{pOH} = -\log[\text{OH}^-_{(aq)}]$$

$$\text{pOH} = -\log[0.375]$$

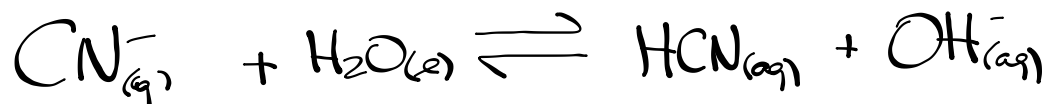
$$\text{pOH} = 0.426$$

$$\text{pH} + \text{pOH} = 14.000$$

$$\text{pH} = 14.000 - 0.426$$

$$\text{pH} = 13.574$$

## Weak Bases



0.250 mol/L

$$K_b = \frac{[\text{HCN}_{(aq)}][\text{OH}^-_{(aq)}]}{[\text{CN}^-_{(aq)}]}, \quad [\text{HCN}_{(aq)}] = [\text{OH}^-_{(aq)}]$$

$$K_a K_b = K_w$$

$$K_b = \frac{[\text{OH}^-_{(aq)}]^2}{[\text{CN}^-_{(aq)}]}$$

$$K_b = \frac{K_w}{K_a}$$

$$K_b = \frac{1.0 \times 10^{-14}}{6.2 \times 10^{-10}}$$

$$[\text{OH}^-_{(aq)}] = \sqrt{K_b [\text{CN}^-_{(aq)}]}$$

$$K_b = 1.61 \times 10^{-5}$$

$$[\text{OH}^-_{(aq)}] = \sqrt{(1.61 \times 10^{-5})(0.250)}$$

$$[\text{OH}^-_{(aq)}] = 2.01 \times 10^{-3} \text{ M}$$

$$\text{pOH} = -\log [\text{OH}^-_{(aq)}]$$

$$\text{pH} + \text{pOH} = 14.000$$

$$\text{pOH} = -\log [2.01 \times 10^{-3}]$$

$$\text{pH} = 14.000 - 2.697$$

$$\boxed{\text{pOH} = 2.697}$$

$$\boxed{\text{pH} = 11.303}$$

# Worksheet