

TITRATION WORKSHEET #4

Name _____

Use your own paper to show **all** work.

pH
+ pOH to 2 dp.
minimum!

1H⁺:1OH⁻
1A:1B →

1. What is the concentration of hydroiodic acid if 59.69 mL of it is neutralized by 40.39 mL of a .2968 M lithium hydroxide solution? $C_A = 2.04 \times 10^{-1} M$

2. It requires 65.95 mL of potassium hydroxide solution to neutralize 89.29 mL of 0.2118-M nitric acid. What is the concentration of the potassium hydroxide solution? $C_B = 2.86 \times 10^{-1} M$

1A:2B →

3. What is the molarity of a copper(I) hydroxide solution if 50.50 mL of the solution is titrated to the endpoint with 51.99 mL of 0.3574-M carbonic acid? $C_B = 7.36 \times 10^{-1} M$

2A:3B →

4. What volume of a 0.8351-M iron(II) hydroxide solution is needed to neutralize 98.35 mL of 0.5417-M phosphoric acid? $V_B = 95.7 mL$

5. Complete the table

pH	pOH	[H ₃ O ⁺]	[OH ⁻]
2.05	11.98	8.91×10^{-3}	1.12×10^{-12}
8.95	5.05	1.12×10^{-9}	8.93×10^{-6}
8.00	6.00	9.90×10^{-9}	1×10^{-6}
10.86	3.14	1.38×10^{-11}	7.27×10^{-4}

1. $40.93 \text{ mL B} \times \frac{0.2968 \text{ mol B}}{1 \text{ L}} \times \frac{1 \text{ mol A}}{1 \text{ mol B}} \times \frac{1}{59.69 \text{ mL}} = 2.04 \times 10^{-1} M$

2. $89.29 \text{ mL A} \times \frac{0.2118 \text{ mol A}}{1 \text{ L}} \times \frac{1 \text{ mol B}}{1 \text{ mol A}} \times \frac{1}{65.95 \text{ mL B}} = 2.86 \times 10^{-1} M$

3. $51.99 \text{ mL A} \times \frac{0.3574 \text{ mol A}}{1 \text{ L}} \times \frac{2 \text{ mol B}}{1 \text{ mol A}} \times \frac{1}{50.50 \text{ mL}} = 7.36 \times 10^{-1} M$

4. $98.35 \text{ mL A} \times \frac{0.5417 \text{ mol A}}{1 \text{ L}} \times \frac{3 \text{ mol B}}{2 \text{ mol A}} \times \frac{1 \text{ L B}}{0.8351 \text{ mol B}} = 9.57 \times 10 \text{ mL} = 95.7 \text{ mL}$

$$n_B C_A V_A = n_B C_B V_B = \text{non science CEGEP}$$

DA = Science CEGEP

Titration Practice Worksheet

Find the requested quantities in the following problems:

- 1) If it takes 54 mL of 0.1 M NaOH to neutralize 125 mL of an HCl solution, what is the concentration of the HCl? (0.043 M)
- 2) If it takes 25 mL of 0.05 M HCl to neutralize 345 mL of NaOH solution, what is the concentration of the NaOH solution? (0.0036 M)
- 3) If it takes 50 mL of 0.5 M KOH solution to completely neutralize 125 mL of sulfuric acid solution (H_2SO_4), what is the concentration of the H_2SO_4 solution? (0.1 M)
- 4) Can I titrate a solution of unknown concentration with another solution of unknown concentration and still get a meaningful answer? Explain your answer in a few sentences.
- 5) Explain the difference between an endpoint and equivalence point in a titration.

→ colour Δ of indicator

↪ mol A = mol B! =
neutralization