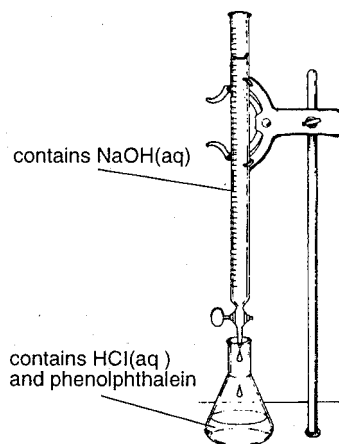


- ____1. Which type of reaction will produce water and a salt?
 (A) saponification (C) esterification
 (B) fermentation (D) neutralization
- ____2. Which reaction occurs when hydrogen ions react with hydroxide ions to form water?
 (A) substitution (C) ionization
 (B) saponification (D) neutralization
- ____3. Which equation represents a neutralization reaction?
 (A) $\text{Na}_2\text{CO}_3 + \text{CaCl}_2 \rightarrow 2 \text{NaCl} + \text{CaCO}_3$
 (B) $\text{Ni}(\text{NO}_3)_2 + \text{H}_2\text{S} \rightarrow \text{NiS} + 2 \text{HNO}_3$
 (C) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$
 (D) $\text{H}_2\text{SO}_4 + \text{Mg}(\text{OH})_2 \rightarrow \text{MgSO}_4 + 2 \text{H}_2\text{O}$
- ____4. Which compound is a salt?
 (A) NaNO_3
 (B) H_3PO_4
 (C) CH_3COOH
 (D) $\text{Ca}(\text{OH})_2$
- ____5. What volume of 0.500 M $\text{HNO}_3(\text{aq})$ must completely react to neutralize 100.0 milliliters of 0.100 M $\text{KOH}(\text{aq})$?
 (A) 10.0 mL (C) 50.0 mL
 (B) 20.0 mL (D) 500. mL
- ____6. How many milliliters of 0.100 M $\text{NaOH}(\text{aq})$ would be needed to completely neutralize 50.0 milliliters of 0.300 M $\text{HCl}(\text{aq})$?
 (A) 16.7 mL (C) 150. mL
 (B) 50.0 mL (D) 300. mL
- ____7. Which process uses a volume of solution of known concentration to determine the concentration of another solution?
 (A) distillation (C) transmutation
 (B) substitution (D) titration

- ____8. The diagram below shows $\text{NaOH}(\text{aq})$ being added to $\text{HCl}(\text{aq})$. A few drops of phenolphthalein were added to the flask before the titration was started.



The endpoint in this titration is reached when the solution in the flask appears

- (A) pink (C) blue
 (B) colorless (D) yellow
- ____9. What is the molarity of an HNO_3 solution if 50.0 milliliters of 0.50 M LiOH is required to exactly neutralize 100. milliliters of the HNO_3 solution?
 (A) 1.5 M (C) 0.50 M
 (B) 2.0 M (D) 0.25 M
- ____10. The following data were collected at the endpoint of a titration performed to find the molarity of an HCl solution.

Volume of acid (HCl) used = 14.4 ml
 Volume of base (NaOH) used = 22.4 ml
 Molarity of standard base (NaOH) = 0.20 M

- What is the molarity of the acid solution?
 (A) 1.6 M (C) 0.31 M
 (B) 0.64 M (D) 0.13 M

Worksheet: Acid-Base Calcs II

___ 11. The table below shows the color of an indicator in specific pH ranges.

Color	pH Range
Red	1–4
Orange	5–6
Green	6–7
Blue	8–10
Violet	11–14

If this indicator is used when titrating an unknown strong base by adding a strong acid, the color of the indicator will change from

- (A) blue to green (C) orange to green
 (B) green to blue (D) green to orange

___ 12. If 25. milliliters of 0.80 M HCl is used to completely neutralize 40. milliliters of NaOH solution, what is the molarity of the base?

- (A) 5.0 M (C) 0.050 M
 (B) 0.50 M (D) 50. M

___ 13. What is the pH of a 0.0001 M aqueous solution of HCl?

- (A) 1 (C) 3
 (B) 2 (D) 4

___ 14. What is the pH of a 0.00001 molar HCl solution?

- (A) 1 (C) 5
 (B) 9 (D) 4

___ 15. What is the pOH of a 0.0001 M aqueous solution of NaOH?

- (A) 1 (C) 3
 (B) 2 (D) 4

___ 16. What is the pOH of a 0.0001 M aqueous solution of HCl?

- (A) 10 (C) 12
 (B) 11 (D) 13

___ 17. What is the pH of a 0.0001 M aqueous solution of NaOH?

- (A) 10 (C) 12
 (B) 11 (D) 13