

1. Acids and bases share some common properties. Which of the properties mentioned below do acids and bases share? Select **all** that apply.

- A. Both acids and bases have a sour taste.
- B. Both acids and bases are slippery to the touch.
- C. Both acids and bases can conduct electricity in aqueous solutions.
- D. Both acids and bases affect indicators such as litmus paper.

2. Calculate the pH of a basic solution of NaOH with a concentration of $8.1 \times 10^{-3}M$.

- A. 3
- B. 11
- C. 12
- D. 8

3. Predict whether the reactants or products are favored for reactions at equilibrium that have the given equilibrium constants.

Write each equilibrium constant value into the correct box.

- a. 5.6×10^{14}
- b. 5.6×10^{-7}
- c. 5.6×10^5
- d. 5.6×10^{-21}

| Reactants favored | Products favored |
|-------------------|------------------|
| | |

4. Calculate the pH of each solution, and classify it as either acidic or basic.

a. $[H^+] = 4.6 \times 10^{-4}M$

The solution is _____ because the pH is _____.

b. $[H^+] = 1.2 \times 10^{-8}M$

The solution is _____ because the pH is _____.

c. $[OH^-] = 8.3 \times 10^{-4}M$

The solution is _____ because the pH is _____.

5. Which change to a chemical reaction will result in the formation of a more acidic product?

Select **all** that apply.

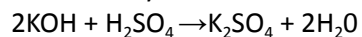
- A. lowering the K_a value
- B. increasing the yield of hydroxide ions
- C. changing the yield to H_3O^+ and an anion
- D. dissolving an Arrhenius acid in water instead

6. The neutralization of _____ with _____ results in the formation of potassium sulfate.

7. Mixing a strong acid with a strong base produces a neutralization reaction with which of the following products?

- A. salt and water
- B. salt and hydrogen
- C. salt and carbon dioxide
- D. salt, carbon dioxide, and water

8. 25.0 mL of a 0.4M KOH sample are required to neutralize a 15.0 mL sample of sulfuric acid. What is the molarity of the sulfuric acid?



- A. 0.33M
- B. 1.5M
- C. 3.0M
- D. 2.5M

9. Which of the following combinations would be a good buffer? Select all that apply.

- A. HNO_3 and $NaNO_3$
- B. H_2CO_3 and $NaHCO_3$
- C. KCl and K_2CO_3
- D. NH_3 and NH_4Cl

10. When acid is added to a dihydrogen phosphate ion–hydrogen phosphate ion buffer system, the H^+ reacts with

- A. $H_2PO_4^-$ to produce HPO_4^{2-} .
- B. HPO_4^{2-} to produce $H_2PO_4^-$.
- C. $H_2PO_4^-$ to produce water.
- D. water to produce HPO_4^{2-} .

11. The components of a buffer system help to keep the pH at equilibrium

- A. only when H^+ is added to the system.
- B. only when OH^- is added to the system.
- C. when H^+ or OH^- are added to the system.
- D. only when H_2O is added to the system.

12. Complete the paragraph using the words.

- indicator
- equivalence point
- acetone
- end point

Titration is a method used to determine the solution concentration of acids and bases. When neutralization occurs, the _____ is reached. The _____ changes color at the _____.