

1. Which word equation represents a neutralization reaction?
- A) base + acid \rightarrow salt + water
B) base + salt \rightarrow water + acid
C) salt + acid \rightarrow base + water
D) salt + water \rightarrow acid + base
2. What are the products of a reaction between KOH(aq) and HCl(aq)?
- A) H₂ and KClO B) H₂O and KCl
C) KH and HClO D) KOH and HCl
3. Given the balanced equation representing a reaction:
- $$\text{H}_2\text{SO}_4(\text{aq}) + 2\text{KOH}(\text{aq}) \rightarrow \text{K}_2\text{SO}_4(\text{aq}) + 2\text{H}_2\text{O}(\ell)$$
- Which type of reaction is represented by this equation?
- A) decomposition B) neutralization
C) single replacement D) synthesis
4. Which equation represents a neutralization reaction?
- A) $4\text{Fe}(\text{s}) + 3\text{O}_2(\text{g}) \rightarrow \text{Fe}_2\text{O}_3(\text{s})$
B) $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\ell)$
C) $\text{HNO}_3(\text{aq}) + \text{KOH}(\text{aq}) \rightarrow \text{KNO}_3(\text{aq}) + \text{H}_2\text{O}(\ell)$
D) $\text{AgNO}_3(\text{aq}) + \text{KCl}(\text{aq}) \rightarrow \text{KNO}_3(\text{aq}) + \text{AgCl}(\text{s})$
5. Sulfuric acid, H₂SO₄(aq), can be used to neutralize barium hydroxide, Ba(OH)₂(aq). What is the formula for the salt produced by this neutralization?
- A) BaS B) BaSO₂
C) BaSO₃ D) BaSO₄
6. Which compound could serve as a reactant in a neutralization reaction?
- A) NaCl B) KOH
C) CH₃OH D) CH₃CHO
7. Which reaction occurs when hydrogen ions react with hydroxide ions to form water?
- A) substitution B) saponification
C) ionization D) neutralization
8. 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) $\text{H}_2\text{SO}_4 + \text{Mg}(\text{OH})_2 \rightarrow \text{MgSO}_4 + 2 \text{H}_2\text{O}$
9. Which type of reaction will produce water and a salt?
- A) saponification B) fermentation
C) esterification D) neutralization
10. Which reaction represents the process of neutralization?
- A) $\text{Mg}(\text{s}) + 2 \text{HCl}(\text{aq}) \rightarrow \text{MgCl}_2(\text{aq}) + \text{H}_2(\text{g})$
B) $\text{HCl}(\text{aq}) + \text{KOH}(\text{aq}) \rightarrow \text{KCl}(\text{aq}) + \text{H}_2\text{O}(\ell)$
C) $\text{Pb}(\text{NO}_3)_2(\text{aq}) + \text{CaCl}(\text{aq}) \rightarrow \text{Ca}(\text{NO}_3)_2(\text{aq}) + \text{PbCl}_2(\text{s})$
D) $2 \text{KClO}_3(\text{s}) \rightarrow \text{KCl}(\text{s}) + 3 \text{O}_2(\text{g})$
11. Which reaction occurs when equivalent quantities of H⁺ (or H₃O⁺) and OH⁻ are mixed?
- A) oxidation B) reduction
C) hydrolysis D) neutralization
12. As an acid solution is added to neutralize a base solution, the OH⁻ concentration of the base solution
- A) decreases B) increases
C) remains the same
13. Given the neutralization reaction:
- $$\text{H}_2\text{SO}_4 + 2 \text{KOH} \rightarrow \text{K}_2\text{SO}_4 + 2 \text{HOH}$$
- Which compound is a salt?
- A) KOH B) H₂SO₄
C) K₂SO₄ D) HOH
14. Which compound is a salt?
- A) NaNO₃ B) H₃PO₄
C) CH₃COOH D) Ca(OH)₂
15. Given the equation:
- $$\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$$
- Which type of reaction does the equation represent?
- A) esterification B) decomposition
C) hydrolysis D) neutralization

16. Which compound is a salt?
A) CH_3OH B) $\text{C}_6\text{H}_{12}\text{O}_6$
C) $\text{H}_2\text{C}_2\text{O}_4$ D) $\text{KC}_2\text{H}_3\text{O}_2$
17. Which equation represents a neutralization reaction?
A) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$
B) $2 \text{HCl} + \text{Zn} \rightarrow \text{ZnCl}_2 + \text{H}_2$
C) $\text{H}_2\text{SO}_4 + \text{CaCO}_3 \rightarrow \text{CaSO}_4 + \text{H}_2\text{O} + \text{CO}_2$
D) $\text{HNO}_3 + \text{KOH} \rightarrow \text{KNO}_3 + \text{H}_2\text{O}$
18. Given the reaction:
$$\text{KOH} + \text{HNO}_3 \rightarrow \text{KNO}_3 + \text{H}_2\text{O}$$

Which process is taking place?
A) neutralization B) esterification
C) substitution D) addition
19. When hydrochloric acid is neutralized by sodium hydroxide, the salt formed is sodium
A) hydrochlorate B) chlorate
C) chloride D) perchloride
20. Which equation represents a neutralization reaction?
A) $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\ell)$
B) $\text{Ag}^+(\text{aq}) + \text{I}^-(\text{aq}) \rightarrow \text{AgI}(\text{s})$
C) $\text{Zn}(\text{s}) + 2 \text{HCl}(\text{aq}) \rightarrow \text{ZnCl}_2(\text{aq}) + \text{H}_2(\text{g})$
D) $\text{NaCl}(\text{aq}) + \text{AgNO}_3(\text{aq}) \rightarrow \text{NaNO}_3(\text{aq}) + \text{AgCl}(\text{s})$
21. Which products are formed when an acid reacts with a base?
A) an alcohol and carbon dioxide
B) an ester and water
C) a soap and glycerine
D) a salt and water
22. Which equation represents a neutralization reaction?
A) $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
B) $2 \text{Na} + 2 \text{H}_2\text{O} \rightarrow 2 \text{NaOH} + \text{H}_2$
C) $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
D) $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$
23. Which compound reacts with an acid to form a salt and water?
A) CH_3Cl B) CH_3COOH
C) KCl D) KOH
24. Which type of reaction will occur when equal volumes of 0.1 M HCl and 0.1 M NaOH are mixed?
A) neutralization B) ionization
C) electrolysis D) hydrolysis
25. When $\text{NaOH}(\text{aq})$ reacts completely with $\text{HCl}(\text{aq})$ and the resulting solution is evaporated to dryness, the solid remaining is
A) an ester B) an alcohol
C) a salt D) a metal
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