

Balancing Equations and Reaction Types

Write balanced equations for the following word equations. Indicate the type of reaction on the line by classifying each reaction as single replacement (SR), double replacement (DR), decomposition (D), synthesis (S), or combustion (C).

1. _____ potassium chloride + silver nitrate potassium nitrate + silver chloride
2. _____ aluminum hydroxide + sodium nitrate aluminum nitrate + sodium hydroxide
3. _____ iron metal + copper(II) sulfate iron(II) sulfate + copper metal
4. _____ aluminum metal + copper(II) chloride aluminum chloride + copper metal
5. _____ potassium bromide potassium metal + bromine
6. _____ calcium carbonate calcium oxide + carbon dioxide gas
7. _____ zinc metal + oxygen gas zinc oxide
8. _____ chlorine gas + sodium metal sodium chloride
9. _____ aluminum sulfate + barium chloride aluminum chloride + barium sulfate
10. _____ beryllium fluoride + magnesium magnesium fluoride + beryllium

11. _____ sodium hydrogen carbonate \square sodium carbonate + carbon dioxide + water

Complete the word equation for the following chemical equations. Then below the word equation, write the balanced chemical equation. Indicate the type of reaction on the line to the left of the equation by classifying each reaction as single replacement (SR), double replacement (DR), decomposition (D), synthesis (S), or combustion (C).

_____ 12. aluminum sulfate + calcium phosphate \square _____

_____ 13. magnesium chloride + silver nitrate \square _____

_____ 14. sodium chlorate \square _____

_____ 15. hydrogen gas + oxygen gas \square _____

_____ 16. zinc metal + copper(II) nitrate \square _____

_____ 17. sulfurous acid, H_2SO_3 \square water + sulfur dioxide

_____ 18. copper(II) oxide + sulfuric acid, H_2SO_4 \square _____

_____ 19. nitrogen gas + hydrogen gas \square ammonia (NH_3)

_____ 20. sodium iodide + chlorine gas \square _____

_____ 21. copper(II) hydroxide \square copper(II) oxide + water

_____ 22. ammonia gas (NH_3) + hydrochloric acid (HCl) \square _____
(hint: single product)

_____ 23. potassium metal + water (hint: H^+OH^-) \square _____

_____ 24. propane (C_3H_8) + oxygen \square _____

(hint: two products)

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Answer Key

1. potassium chloride + silver nitrate --> potassium nitrate + silver chloride



2. aluminum hydroxide + sodium nitrate \square aluminum nitrate + sodium hydroxide



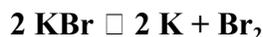
3. iron metal + copper(II) sulfate \square iron(II) sulfate + copper metal



4. aluminum metal + copper(II) chloride \square aluminum chloride + copper metal



5. potassium bromide \square potassium metal + bromine



6. calcium carbonate \square calcium oxide + carbon dioxide gas



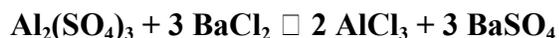
7. zinc metal + oxygen gas \square zinc oxide



8. chlorine gas + sodium metal \square sodium chloride



9. aluminum sulfate + barium chloride \square aluminum chloride + barium sulfate



10. beryllium fluoride + magnesium \square magnesium fluoride + beryllium



11. sodium hydrogen carbonate \square sodium carbonate + carbon dioxide + water



DR 12. aluminum sulfate + calcium phosphate \square
aluminum phosphate + calcium sulfate,
 $\text{Al}_2(\text{SO}_4)_3 + \text{Ca}_3(\text{PO}_4)_2 \square 2 \text{AlPO}_4 + 3 \text{CaSO}_4$

DR 13. magnesium chloride + silver nitrate \square
magnesium nitrate + silver chloride,
 $\text{MgCl}_2 + 2 \text{AgNO}_3 \square \text{Mg}(\text{NO}_3)_2 + 2 \text{AgCl}$

D 14. sodium chlorate \square **sodium chloride + oxygen,**
 $2 \text{NaClO}_3 \square 2 \text{NaCl} + 3 \text{O}_2$

S 15. hydrogen gas + oxygen gas \square **water,**
 $2 \text{H}_2 + \text{O}_2 \square 2 \text{H}_2\text{O}$

SR 16. zinc metal + copper(II) nitrate \square **zinc nitrate + copper**
 $\text{Zn} + \text{Cu}(\text{NO}_3)_2 \square \text{Cu} + \text{Zn}(\text{NO}_3)_2$

D 17. sulfurous acid, $\text{H}_2\text{SO}_3 \square$ water + sulfur dioxide
 $\text{H}_2\text{SO}_3 \square \text{H}_2 + \text{SO}_2$

DR 18. copper(II) oxide + sulfuric acid \square **copper (II) sulfate + water**
 $\text{CuO} + \text{H}_2\text{SO}_4 \square \text{CuSO}_4 + \text{H}_2\text{O}$

S 19. nitrogen gas + hydrogen gas \square ammonia (NH_3)
 $2 \text{N}_2 + 3 \text{H}_2 \square 2 \text{NH}_3$

SR 20. sodium iodide + chlorine gas \square **sodium chloride + iodine**
 $2 \text{NaI} + \text{Cl}_2 \square 2 \text{NaCl} + \text{I}_2$

D 21. copper(II) hydroxide \square copper(II) oxide + water
 $\text{Cu}(\text{OH})_2 \square \text{CuO} + \text{H}_2\text{O}$

S 22. ammonia gas (NH_3) + hydrochloric acid (HCl) \rightarrow **ammonium chloride**
 $\text{NH}_3 + \text{HCl} \square \text{NH}_4\text{Cl}$

SR 23. potassium metal + water (hint: H^+OH^-) \square **potassium hydroxide and hydrogen**
 $\text{K} + \text{H}^+\text{OH}^- \square 2 \text{KOH} + \text{H}_2$

C 24. propane (C_3H_8) + oxygen \square **carbon dioxide and water**
 $\text{C}_3\text{H}_8 + 5 \text{O}_2 \square 3 \text{CO}_2 + 4 \text{H}_2\text{O}$