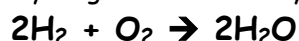


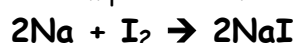
Combination Reactions

Predict the product and write balanced reactions for each of the following.

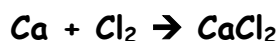
1. Hydrogen burned in oxygen.



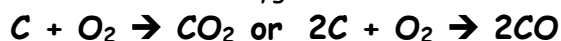
2. Sodium plus iodine.



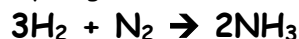
3. Calcium burned in chlorine.



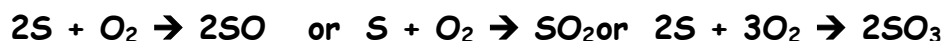
4. Carbon burned in oxygen.



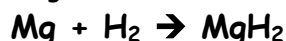
5. Hydrogen combined with nitrogen.



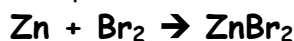
6. Sulfur burned in air.



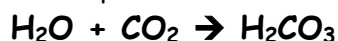
7. Magnesium burned in hydrogen.



8. Zinc plus bromine.



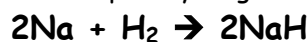
9. Water plus carbon dioxide.



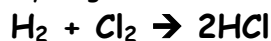
10. Sulfur dioxide plus water.



11. Sodium plus hydrogen.



12. Hydrogen burned in chlorine.



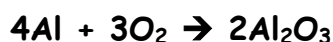
13. Iron burned in chlorine.



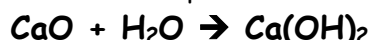
14. Copper plus fluorine.



15. Aluminum burned in air.



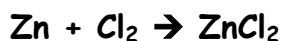
16. Calcium oxide plus water.



17. Iron combined with sulfur.



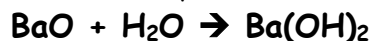
18. Zinc burned in chlorine.



19. Lithium oxide plus water.



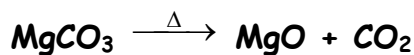
20. Barium oxide plus water.



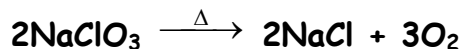
Decomposition Reactions

Predict the products and write balanced reactions for each of the following:

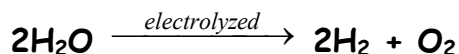
1. The heating of magnesium carbonate.



2. The heating of sodium chlorate.



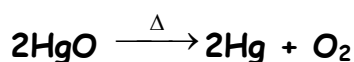
3. The electrolysis of water.



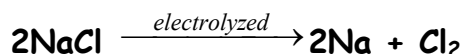
4. The decomposition of calcium carbonate.



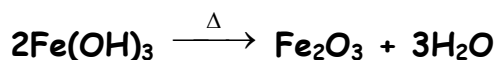
5. The heating of mercuric oxide.



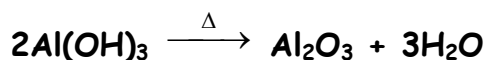
6. The electrolysis of sodium chloride.



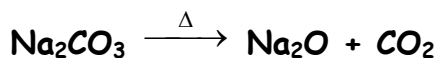
7. Ferric hydroxide heated.



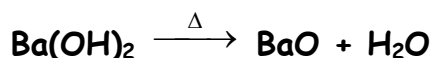
8. Aluminum hydroxide heated.



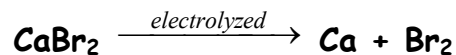
9. Sodium carbonate heated.



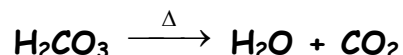
10. Barium hydroxide heated.



11. The electrolysis of calcium bromide.



12. The heating of carbonic acid.



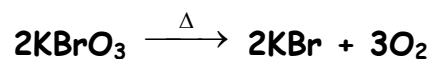
13. Decomposition of sulfuric acid.



14. Decomposition of calcium chlorate.



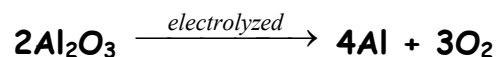
15. Heating of potassium bromate.



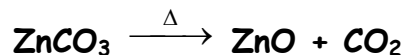
16. Decomposition of sulfurous acid.



17. Electrolysis of aluminum oxide.



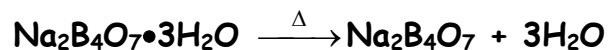
18. Zinc carbonate heated.



19. Decomposition of phosphoric acid.



20. Heating of sodium tetraborate trihydrate.



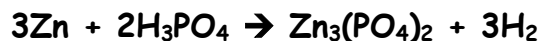
Single Displacement Reactions

Predict the products and write balanced reactions for each of the following:

1. Chlorine plus sodium iodide.



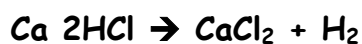
2. Zinc and phosphoric acid.



3. Sodium and water.



4. Calcium and hydrochloric acid.



5. Calcium plus water.



6. Zinc sulfate plus sodium.



7. Ferrous chloride plus aluminum.



8. Ammonium iodide and chlorine.



9. Nickel and sulfuric acid.



10. Strontium and water.



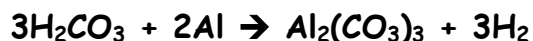
11. Mercuric sulfate and zinc.



12. Potassium and water.



13. Carbonic acid plus aluminum.



14. Copper(II) nitrate and zinc.



15. Sodium nitrate and potassium.



16. Silver acetate and copper.



17. Iron added to sulfuric acid.



18. Zinc plus cupric sulfate.



19. Magnesium nitrate added to copper.



20. Cuprous chlorate plus magnesium.



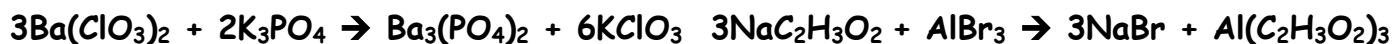
Double Displacement

Predict the products and write balanced reactions for each of the following:

1. Sodium chloride and silver nitrate.



2. Barium chlorate and potassium phosphate.



3. Ammonium chloride and potassium hydroxide.



4. Potassium nitrate plus cupric sulfate.



5. Sulfuric acid plus potassium hydroxide.



6. Hydrochloric acid and calcium carbonate.



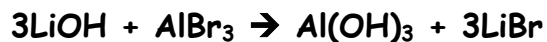
7. Stannous chloride plus sodium nitrate.



8. Strontium chlorate and sodium acetate.



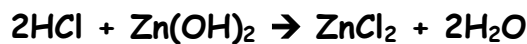
9. Lithium hydroxide and aluminum bromide.



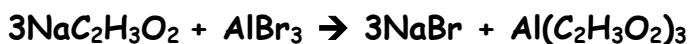
10. Sodium sulfate plus chloric acid.



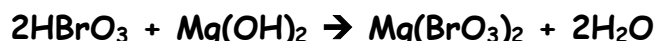
11. Hydrochloric acid plus zinc hydroxide.



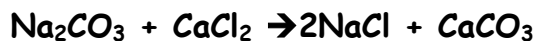
12. Sodium acetate and aluminum bromide.



13. Bromic acid and magnesium hydroxide.



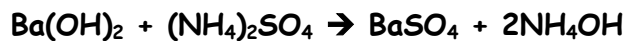
14. Sodium carbonate plus calcium chloride.



15. Potassium chloride and silver nitrate.



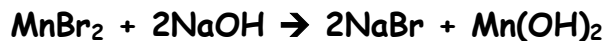
16. Barium hydroxide plus ammonium sulfate.



17. Ferric chloride and potassium hydroxide.



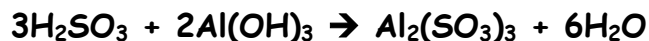
18. Manganese(II) bromide and sodium hydroxide.



19. Hydrochloric acid and sodium sulfate.



20. Sulfurous acid and aluminum hydroxide.



Reaction Prediction - Review

- Directions:
1. State the type of reaction.
 2. If the reaction occurs, write the symbols, complete and balance the equation.
 3. If the reaction does not occur, state why not.

1. potassium + iodine →



2. water $\xrightarrow{\text{electrolyzed}}$



3. zinc + lead(II) chloride →



4. sodium nitrate + ammonium chloride →



5. mercury + cadmium nitrate →



6. manganese + sodium →



7. silver nitrate + hydrogen sulfide →



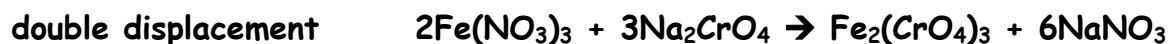
8. potassium bromide $\xrightarrow{\text{electrolyzed}}$



9. tin + copper(II) sulfate →



10. iron(III) nitrate + sodium chromate →



11. calcium + iodine →



12. magnesium + hydrochloric acid →



13. carbon + oxygen →



14. platinum + lead(II) nitrate →



15. lithium oxide + water →
combination $\text{Li}_2\text{O} + \text{H}_2\text{O} \rightarrow 2\text{LiOH}$
16. aluminum + sulfuric acid →
single displacement $2\text{Al} + 3\text{H}_2\text{SO}_4 \rightarrow 3\text{H}_2 + \text{Al}_2(\text{SO}_4)_3$
17. ammonium phosphate + lithium hydroxide →
double displacement $(\text{NH}_4)_3\text{PO}_4 + 3\text{LiOH} \rightarrow 3\text{NH}_4\text{OH} + \text{Li}_3\text{PO}_4$
18. chlorine + fluorine →
combination $\text{Cl}_2 + \text{F}_2 \rightarrow 2\text{ClF}$
19. sodium carbonate $\xrightarrow{\Delta}$ →
decomposition $\text{Na}_2\text{CO}_3 \xrightarrow{\Delta} \text{Na}_2\text{O} + \text{CO}_2$
20. potassium chlorate $\xrightarrow{\Delta}$ →
decomposition $2\text{KClO}_3 \xrightarrow{\Delta} 2\text{KCl} + 3\text{O}_2$
21. hydrogen + sodium →
combination $\text{H}_2 + 2\text{Na} \rightarrow 2\text{NaH}$
22. calcium oxide + water →
combination $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$
23. aluminum + hydrochloric acid →
single displacement $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$
24. calcium hydroxide + nitric acid →
double displacement $\text{Ca}(\text{OH})_2 + 2\text{HNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + 2\text{H}_2\text{O}$
25. aluminum + magnesium →
combination $\text{Al} + \text{Mg} \rightarrow \text{no reaction, two metals will not combine}$
26. magnesium + zinc nitrate →
single displacement $\text{Mg} + \text{Zn}(\text{NO}_3)_2 \rightarrow \text{Mg}(\text{NO}_3)_2 + \text{Zn}$
27. dinitrogen pentoxide + water →
combination $\text{N}_2\text{O}_5 + \text{H}_2\text{O} \rightarrow 2\text{HNO}_3$
28. sodium chlorate $\xrightarrow{\Delta}$ →
decomposition $2\text{NaClO}_3 \xrightarrow{\Delta} 2\text{NaCl} + 3\text{O}_2$
29. barium nitrate + sodium dichromate →
double displacement $\text{Ba}(\text{NO}_3)_2 + \text{Na}_2\text{Cr}_2\text{O}_7 \rightarrow \text{BaCr}_2\text{O}_7 + 2\text{NaNO}_3$
30. calcium phosphate + aluminum sulfate →
double displacement $\text{Ca}_3(\text{PO}_4)_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow 3\text{CaSO}_4 + 2\text{AlPO}_4$

31. zinc carbonate $\xrightarrow{\Delta}$
decomposition $\text{ZnCO}_3 \xrightarrow{\Delta} \text{ZnO} + \text{CO}_2$
32. potassium + fluorine \rightarrow
combination $2\text{K} + \text{F}_2 \rightarrow 2\text{KF}$
33. sodium + nitric acid \rightarrow
single displacement $2\text{Na} + 2\text{HNO}_3 \rightarrow \text{H}_2 + 2\text{NaNO}_3$
34. sodium + water \rightarrow
single displacement $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$
35. ferric iodide + cupric nitrate \rightarrow
double displacement $2\text{FeI}_3 + 3\text{Cu}(\text{NO}_3)_2 \rightarrow 2\text{Fe}(\text{NO}_3)_3 + 3\text{CuI}_2$
36. lead + sulfuric acid \rightarrow
single displacement $\text{Pb} + \text{H}_2\text{SO}_4 \rightarrow \text{PbSO}_4 + \text{H}_2$
37. sulfur dioxide + water \rightarrow
combination $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_3$
38. oxygen + sulfur \rightarrow
combination $\text{O}_2 + 2\text{S} \rightarrow 2\text{SO}$ or $\text{O}_2 + \text{S} \rightarrow \text{SO}_2$ or $3\text{O}_2 + 2\text{S} \rightarrow 2\text{SO}_3$
39. potassium nitrate $\xrightarrow{\Delta}$
decomposition $2\text{KNO}_3 \xrightarrow{\Delta} 2\text{KNO}_2 + \text{O}_2$
40. sodium bicarbonate $\xrightarrow{\Delta}$
decomposition $2\text{NaHCO}_3 \xrightarrow{\Delta} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$
41. ferrous carbonate + phosphoric acid \rightarrow
double displacement $3\text{FeCO}_3 + 2\text{H}_3\text{PO}_4 \rightarrow \text{Fe}_3(\text{PO}_4)_2 + 3\text{H}_2\text{CO}_3$
42. sulfur trioxide + water \rightarrow
combination $\text{SO}_3 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4$
43. plumbous chlorate + sodium sulfate \rightarrow
double displacement $\text{Pb}(\text{ClO}_3)_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{PbSO}_4 + 2\text{NaClO}_3$
44. barium carbonate $\xrightarrow{\Delta}$
decomposition $\text{BaCO}_3 \xrightarrow{\Delta} \text{BaO} + \text{CO}_2$
45. neon + potassium \rightarrow
combination $\text{Ne} + \text{K} \rightarrow$ no reactions, noble gases are unreactive
46. silver iodide + ferrous sulfide \rightarrow
double displacement $2\text{AgI} + \text{FeS} \rightarrow \text{Ag}_2\text{S} + \text{FeI}_2$

47. bromine + sodium chloride →
single displacement no reaction, bromine is less active than chlorine
48. zinc + sulfuric acid →
single displacement $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$
49. ammonium phosphate + aluminum chloride →
double displacement $(\text{NH}_4)_3\text{PO}_4 + \text{AlCl}_3 \rightarrow 3\text{NH}_4\text{Cl} + \text{AlPO}_4$
50. mercuric oxide $\xrightarrow{\Delta}$ →
decomposition $2\text{HgO} \xrightarrow{\Delta} 2\text{Hg} + \text{O}_2$
51. ammonium nitrite + barium hydroxide →
double displacement $2\text{NH}_4\text{NO}_2 + \text{Ba}(\text{OH})_2 \rightarrow \text{Ba}(\text{NO}_2)_2 + 2\text{NH}_4\text{OH}$
52. magnesium + water →
single displacement $\text{Mg} + \text{H}_2\text{O} \rightarrow$ no reaction, Mg is not active enough to replace H from H_2O
53. magnesium + acetic acid →
single displacement $\text{Mg} + 2\text{HC}_2\text{H}_3\text{O}_2 \rightarrow \text{H}_2 + \text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_2$
54. silver + barium →
combination $\text{Ag} + \text{Ba} \rightarrow$ no reaction, two metals will not combine
55. plumbous hydroxide $\xrightarrow{\Delta}$ →
decomposition $\text{Pb}(\text{OH})_2 \xrightarrow{\Delta} \text{PbO} + \text{H}_2\text{O}$
56. carbonic acid $\xrightarrow{\Delta}$ →
decomposition $\text{H}_2\text{CO}_3 \xrightarrow{\Delta} \text{H}_2\text{O} + \text{CO}_2$
57. lithium + curium(III) fluoride →
single displacement $3\text{Li} + \text{CmF}_3 \rightarrow \text{Cm} + 3\text{LiF}$
58. zinc + aluminum nitrate →
single displacement no reaction, Zn is less active than Al
59. potassium + water →
single displacement $2\text{K} + \text{H}_2\text{O} \rightarrow 2\text{KOH} + \text{H}_2$
60. zinc + water →
single displacement $\text{Zn} + \text{H}_2\text{O} \rightarrow$ no reaction, Zn is not active enough to replace H from H_2O
61. zinc + phosphoric acid →
single displacement $3\text{Zn} + 2\text{H}_3\text{PO}_4 \rightarrow \text{Zn}_3(\text{PO}_4)_2 + 3\text{H}_2$
62. gold + hydrochloric acid →
single displacement $\text{Au} + \text{HCl} \rightarrow$ no reaction, gold is less active than hydrogen

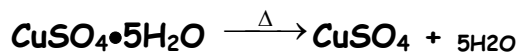
63. calcium bicarbonate $\xrightarrow{\Delta}$

decomposition



64. copper(II) sulfate pentahydrate $\xrightarrow{\Delta}$

decomposition



65. sulfur dioxide + water \rightarrow

combination



66. dinitrogen trioxide + water \rightarrow

combination



67. barium oxide + water \rightarrow

combination



68. nickel(II) chlorate \rightarrow

decomposition



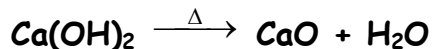
69. iron + copper(II) nitrate \rightarrow

single displacement



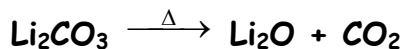
70. calcium hydroxide $\xrightarrow{\Delta}$

decomposition



71. lithium carbonate $\xrightarrow{\Delta}$

decomposition



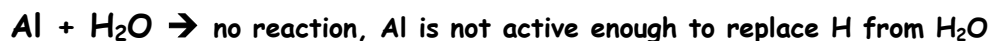
72. barium oxide + water \rightarrow

combination



73. aluminum + water \rightarrow

single displacement



74. potassium + water \rightarrow

single displacement



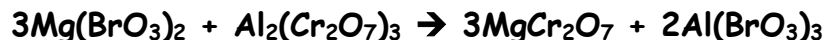
75. sulfur trioxide + water \rightarrow

combination



76. magnesium bromate + aluminum dichromate \rightarrow

double displacement



77. cupric silicate + potassium phosphite \rightarrow

double displacement



78. nickel(III) bicarbonate + zinc \rightarrow

single displacement

