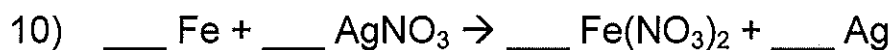
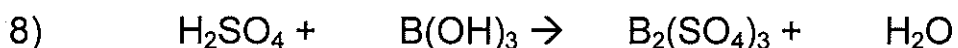
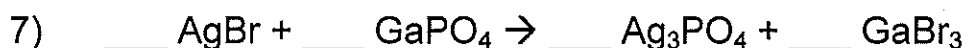
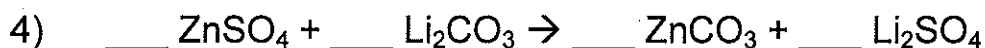
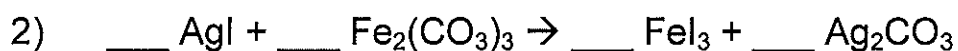
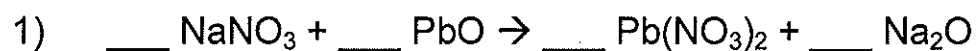


Balancing Equations Practice Worksheet

Balance the following equations:



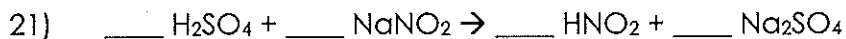
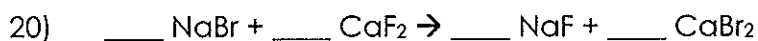
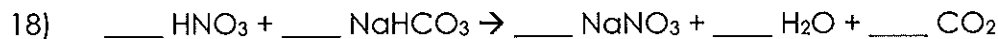
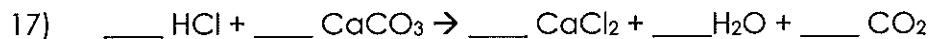
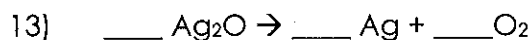
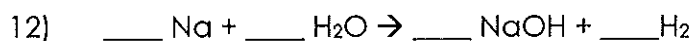
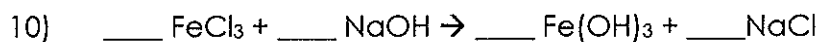
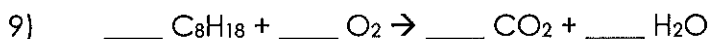
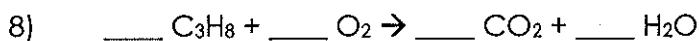
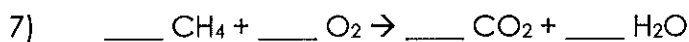
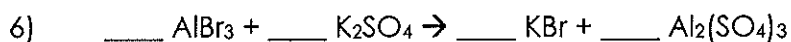
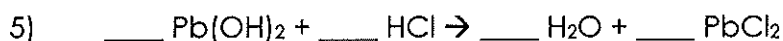
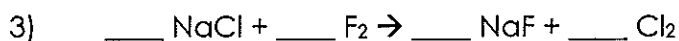
Solutions for the Balancing Equations Practice Worksheet

- 1) $2 \text{NaNO}_3 + \text{PbO} \rightarrow \text{Pb}(\text{NO}_3)_2 + \text{Na}_2\text{O}$
- 2) $6 \text{AgI} + \text{Fe}_2(\text{CO}_3)_3 \rightarrow 2 \text{FeI}_3 + 3 \text{Ag}_2\text{CO}_3$
- 3) $\text{C}_2\text{H}_4\text{O}_2 + 2 \text{O}_2 \rightarrow 2 \text{CO}_2 + 2 \text{H}_2\text{O}$
- 4) $\text{ZnSO}_4 + \text{Li}_2\text{CO}_3 \rightarrow \text{ZnCO}_3 + \text{Li}_2\text{SO}_4$
- 5) $\text{V}_2\text{O}_5 + 5 \text{CaS} \rightarrow 5 \text{CaO} + \text{V}_2\text{S}_5$
- 6) $\text{Mn}(\text{NO}_2)_2 + \text{BeCl}_2 \rightarrow \text{Be}(\text{NO}_2)_2 + \text{MnCl}_2$
- 7) $3 \text{AgBr} + \text{GaPO}_4 \rightarrow \text{Ag}_3\text{PO}_4 + \text{GaBr}_3$
- 8) $3 \text{H}_2\text{SO}_4 + 2 \text{B}(\text{OH})_3 \rightarrow \text{B}_2(\text{SO}_4)_3 + 6 \text{H}_2\text{O}$
- 9) $\text{S}_8 + 8 \text{O}_2 \rightarrow 8 \text{SO}_2$
- 10) $\text{Fe} + 2 \text{AgNO}_3 \rightarrow \text{Fe}(\text{NO}_3)_2 + 2 \text{Ag}$

Chapter 7 Worksheet #1

Balancing Chemical Equations

Balance the equations below:



Balancing Chemical Equations - Answer Key

Balance the equations below:

- 1) $1 \text{ N}_2 + 3 \text{ H}_2 \rightarrow 2 \text{ NH}_3$
- 2) $2 \text{ KClO}_3 \rightarrow 2 \text{ KCl} + 3 \text{ O}_2$
- 3) $2 \text{ NaCl} + 1 \text{ F}_2 \rightarrow 2 \text{ NaF} + 1 \text{ Cl}_2$
- 4) $2 \text{ H}_2 + 1 \text{ O}_2 \rightarrow 2 \text{ H}_2\text{O}$
- 5) $1 \text{ Pb(OH)}_2 + 2 \text{ HCl} \rightarrow 2 \text{ H}_2\text{O} + 1 \text{ PbCl}_2$
- 6) $2 \text{ AlBr}_3 + 3 \text{ K}_2\text{SO}_4 \rightarrow 6 \text{ KBr} + 1 \text{ Al}_2(\text{SO}_4)_3$
- 7) $1 \text{ CH}_4 + 2 \text{ O}_2 \rightarrow 1 \text{ CO}_2 + 2 \text{ H}_2\text{O}$
- 8) $1 \text{ C}_3\text{H}_8 + 5 \text{ O}_2 \rightarrow 3 \text{ CO}_2 + 4 \text{ H}_2\text{O}$
- 9) $2 \text{ C}_8\text{H}_{18} + 25 \text{ O}_2 \rightarrow 16 \text{ CO}_2 + 18 \text{ H}_2\text{O}$
- 10) $1 \text{ FeCl}_3 + 3 \text{ NaOH} \rightarrow 1 \text{ Fe(OH)}_3 + 3 \text{ NaCl}$
- 11) $4 \text{ P} + 5 \text{ O}_2 \rightarrow 2 \text{ P}_2\text{O}_5$
- 12) $2 \text{ Na} + 2 \text{ H}_2\text{O} \rightarrow 2 \text{ NaOH} + 1 \text{ H}_2$
- 13) $2 \text{ Ag}_2\text{O} \rightarrow 4 \text{ Ag} + 1 \text{ O}_2$
- 14) $1 \text{ S}_8 + 12 \text{ O}_2 \rightarrow 8 \text{ SO}_3$
- 15) $6 \text{ CO}_2 + 6 \text{ H}_2\text{O} \rightarrow 1 \text{ C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2$
- 16) $2 \text{ K} + 1 \text{ MgBr}_2 \rightarrow 2 \text{ KBr} + 1 \text{ Mg}$
- 17) $2 \text{ HCl} + 1 \text{ CaCO}_3 \rightarrow 1 \text{ CaCl}_2 + 1 \text{ H}_2\text{O} + 1 \text{ CO}_2$
- 18) $1 \text{ HNO}_3 + 1 \text{ NaHCO}_3 \rightarrow 1 \text{ NaNO}_3 + 1 \text{ H}_2\text{O} + 1 \text{ CO}_2$
- 19) $2 \text{ H}_2\text{O} + 1 \text{ O}_2 \rightarrow 2 \text{ H}_2\text{O}_2$
- 20) $2 \text{ NaBr} + 1 \text{ CaF}_2 \rightarrow 2 \text{ NaF} + 1 \text{ CaBr}_2$
- 21) $1 \text{ H}_2\text{SO}_4 + 2 \text{ NaNO}_2 \rightarrow 2 \text{ HNO}_2 + 1 \text{ Na}_2\text{SO}_4$

Word Equations

Write the word equations below as chemical equations and balance:

- 1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.

- 2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.

- 3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.

- 4) Potassium metal and chlorine gas combine to form potassium chloride.

- 5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.

- 6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.

- 7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.

- 8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.

Word Equations - Answer Key

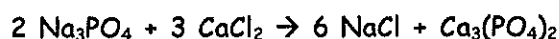
- 1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.



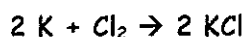
- 2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.



- 3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.



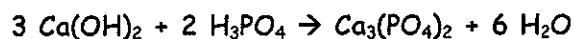
- 4) Potassium metal and chlorine gas combine to form potassium chloride.



- 5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.



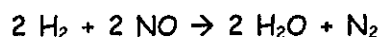
- 6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.



- 7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.



- 8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.



Worksheet: Writing and Balancing Chemical Reactions

1. Balance the following equations and indicate the type of reaction as formation, decomposition, single replacement, double replacement, hydrocarbon combustion, or other.

- a. $\underline{\hspace{1cm}} \text{Cu}_{(s)} + \underline{\hspace{1cm}} \text{O}_{2(g)} \rightarrow \underline{\hspace{1cm}} \text{CuO}_{(s)}$
- b. $\underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)} \rightarrow \underline{\hspace{1cm}} \text{H}_{2(g)} + \underline{\hspace{1cm}} \text{O}_{2(g)}$
- c. $\underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)} \rightarrow \underline{\hspace{1cm}} \text{H}_{2(g)} + \underline{\hspace{1cm}} \text{Fe}_3\text{O}_4_{(s)}$
- d. $\underline{\hspace{1cm}} \text{AsCl}_3_{(aq)} + \underline{\hspace{1cm}} \text{H}_2\text{S}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{As}_2\text{S}_3_{(s)} + \underline{\hspace{1cm}} \text{HCl}_{(aq)}$
- e. $\underline{\hspace{1cm}} \text{CuSO}_4 \cdot 5 \text{H}_2\text{O}_{(s)} \rightarrow \underline{\hspace{1cm}} \text{CuSO}_4_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$
- f. $\underline{\hspace{1cm}} \text{Fe}_2\text{O}_3_{(s)} + \underline{\hspace{1cm}} \text{H}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- g. $\underline{\hspace{1cm}} \text{CaCO}_3_{(s)} \rightarrow \underline{\hspace{1cm}} \text{CaO}_{(s)} + \underline{\hspace{1cm}} \text{CO}_2_{(g)}$
- h. $\underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{S}_8_{(s)} \rightarrow \underline{\hspace{1cm}} \text{FeS}_{(s)}$
- i. $\underline{\hspace{1cm}} \text{H}_2\text{S}_{(aq)} + \underline{\hspace{1cm}} \text{KOH}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)} + \underline{\hspace{1cm}} \text{K}_2\text{S}_{(aq)}$
- j. $\underline{\hspace{1cm}} \text{NaCl}_{(l)} \rightarrow \underline{\hspace{1cm}} \text{Na}_{(l)} + \underline{\hspace{1cm}} \text{Cl}_{2(g)}$
- k. $\underline{\hspace{1cm}} \text{Al}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{SO}_4_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{H}_2_{(g)} + \underline{\hspace{1cm}} \text{Al}_2(\text{SO}_4)_3_{(aq)}$
- l. $\underline{\hspace{1cm}} \text{H}_3\text{PO}_4_{(aq)} + \underline{\hspace{1cm}} \text{NH}_4\text{OH}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)} + \underline{\hspace{1cm}} (\text{NH}_4)_3\text{PO}_4_{(aq)}$
- m. $\underline{\hspace{1cm}} \text{C}_3\text{H}_8_{(g)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- n. $\underline{\hspace{1cm}} \text{Al}_{(s)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Al}_2\text{O}_3_{(s)}$
- o. $\underline{\hspace{1cm}} \text{CH}_4_{(g)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- p. $\underline{\hspace{1cm}} \text{K}_2\text{SO}_4_{(aq)} + \underline{\hspace{1cm}} \text{BaCl}_2_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{KCl}_{(aq)} + \underline{\hspace{1cm}} \text{BaSO}_4_{(s)}$
- q. $\underline{\hspace{1cm}} \text{C}_5\text{H}_{12(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$
- r. $\underline{\hspace{1cm}} \text{Ca}(\text{OH})_2_{(aq)} + \underline{\hspace{1cm}} \text{NH}_4\text{Cl}_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{NH}_4\text{OH}_{(aq)} + \underline{\hspace{1cm}} \text{CaCl}_2_{(aq)}$
- s. $\underline{\hspace{1cm}} \text{V}_2\text{O}_5_{(s)} + \underline{\hspace{1cm}} \text{Ca}_{(s)} \rightarrow \underline{\hspace{1cm}} \text{CaO}_{(s)} + \underline{\hspace{1cm}} \text{V}_{(s)}$
- t. $\underline{\hspace{1cm}} \text{Na}_{(s)} + \underline{\hspace{1cm}} \text{ZnI}_2_{(aq)} \rightarrow \underline{\hspace{1cm}} \text{NaI}_{(aq)} + \underline{\hspace{1cm}} \text{Zn}_{(s)}$
- u. $\underline{\hspace{1cm}} \text{C}_7\text{H}_6\text{O}_3_{(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- v. $\underline{\hspace{1cm}} \text{Ca}_{(s)} + \underline{\hspace{1cm}} \text{N}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Ca}_3\text{N}_2_{(s)}$
- w. $\underline{\hspace{1cm}} \text{Fe}_2\text{O}_3_{(s)} + \underline{\hspace{1cm}} \text{H}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{Fe}_{(s)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(l)}$
- x. $\underline{\hspace{1cm}} \text{C}_{15}\text{H}_{30(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$
- y. $\underline{\hspace{1cm}} \text{BN}_{(s)} + \underline{\hspace{1cm}} \text{F}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{BF}_3_{(s)} + \underline{\hspace{1cm}} \text{N}_2_{(g)}$
- z. $\underline{\hspace{1cm}} \text{C}_{12}\text{H}_{26(l)} + \underline{\hspace{1cm}} \text{O}_2_{(g)} \rightarrow \underline{\hspace{1cm}} \text{CO}_2_{(g)} + \underline{\hspace{1cm}} \text{H}_2\text{O}_{(g)}$

2. Predict the product(s) along with the states, indicate the type of reaction, and balance the following chemical reactions.

- a. A solution of lead (II) nitrate is mixed with a solution of sodium iodide.
- b. Solid zinc sulfide reacts with oxygen in the air.
- c. Liquid butane ($\text{C}_4\text{H}_{10(l)}$) is used as a fuel to ignite a lighter.
- d. Barium hydroxide solution is neutralized by adding hydrochloric acid ($\text{HCl}_{(aq)}$).
- e. Copper metal is placed in a solution of silver nitrate.
- f. Sulfur burns in oxygen to make sulfur dioxide gas.
- g. A solution of aluminum sulfate is mixed with a solution of calcium hydroxide.
- h. Zinc metal is placed in sulfuric acid ($\text{H}_2\text{SO}_4_{(aq)}$).
- i. Aluminum powder is placed in a container filled with chlorine gas.
- j. Sucrose undergoes cellular respiration.

Answers

Question 1

- a. $2 \text{Cu}_{(s)} + \text{O}_{2(g)} \rightarrow 2 \text{CuO}_{(s)}$ (formation)
b. $2 \text{H}_2\text{O}_{(l)} \rightarrow 2 \text{H}_{2(g)} + \text{O}_{2(g)}$ (decomposition)
c. $3 \text{Fe}_{(s)} + 4 \text{H}_2\text{O}_{(g)} \rightarrow 4 \text{H}_{2(g)} + \text{Fe}_3\text{O}_4_{(s)}$ (single replacement)
d. $2 \text{AsCl}_3_{(aq)} + 3 \text{H}_2\text{S}_{(aq)} \rightarrow \text{As}_2\text{S}_3_{(s)} + 6 \text{HCl}_{(aq)}$ (double replacement)
e. $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}_{(s)} \rightarrow \text{CuSO}_4_{(s)} + 5 \text{H}_2\text{O}_{(g)}$ (other – dehydration or decomposition)
f. $\text{Fe}_2\text{O}_3_{(s)} + 3 \text{H}_2_{(g)} \rightarrow 2 \text{Fe}_{(s)} + 3 \text{H}_2\text{O}_{(l)}$ (single replacement)
g. $\text{CaCO}_3_{(s)} \rightarrow \text{CaO}_{(s)} + \text{CO}_2_{(g)}$ (other or decomposition)
h. $8 \text{Fe}_{(s)} + \text{S}_8_{(s)} \rightarrow 8 \text{FeS}_{(s)}$ (formation)
i. $\text{H}_2\text{S}_{(aq)} + 2 \text{KOH}_{(aq)} \rightarrow 2 \text{H}_2\text{O}_{(l)} + \text{K}_2\text{S}_{(aq)}$ (double replacement)
j. $2 \text{NaCl}_{(l)} \rightarrow 2 \text{Na}_{(l)} + \text{Cl}_{2(g)}$ (decomposition)
k. $2 \text{Al}_{(s)} + 3 \text{H}_2\text{SO}_4_{(aq)} \rightarrow 3 \text{H}_{2(g)} + \text{Al}_2(\text{SO}_4)_3_{(aq)}$ (single replacement)
l. $\text{H}_3\text{PO}_4_{(aq)} + 3 \text{NH}_4\text{OH}_{(aq)} \rightarrow 3 \text{H}_2\text{O}_{(l)} + (\text{NH}_4)_3\text{PO}_4_{(aq)}$ (double replacement)
m. $\text{C}_3\text{H}_8_{(g)} + 5 \text{O}_2_{(g)} \rightarrow 3 \text{CO}_2_{(g)} + 4 \text{H}_2\text{O}_{(l)}$ (hydrocarbon combustion)
n. $4 \text{Al}_{(s)} + 3 \text{O}_2_{(g)} \rightarrow 2 \text{Al}_2\text{O}_3_{(s)}$ (formation)
o. $\text{CH}_4_{(g)} + 2 \text{O}_2_{(g)} \rightarrow \text{CO}_2_{(g)} + 2 \text{H}_2\text{O}_{(l)}$ (hydrocarbon combustion)
p. $\text{K}_2\text{SO}_4_{(aq)} + \text{BaCl}_2_{(aq)} \rightarrow 2 \text{KCl}_{(aq)} + \text{BaSO}_4_{(s)}$ (double replacement)
q. $\text{C}_5\text{H}_{12(l)} + 8 \text{O}_2_{(g)} \rightarrow 5 \text{CO}_2_{(g)} + 6 \text{H}_2\text{O}_{(g)}$ (hydrocarbon combustion)
r. $\text{Ca}(\text{OH})_2_{(aq)} + 2 \text{NH}_4\text{Cl}_{(aq)} \rightarrow 2 \text{NH}_4\text{OH}_{(aq)} + \text{CaCl}_2_{(aq)}$ (double replacement)
s. $\text{V}_2\text{O}_5_{(s)} + 5 \text{Ca}_{(s)} \rightarrow 5 \text{CaO}_{(s)} + 2 \text{V}_{(s)}$ (single replacement)
t. $2 \text{Na}_{(s)} + \text{ZnI}_2_{(aq)} \rightarrow 2 \text{NaI}_{(aq)} + \text{Zn}_{(s)}$ (single replacement)
u. $\text{C}_7\text{H}_6\text{O}_3_{(l)} + 7 \text{O}_2_{(g)} \rightarrow 7 \text{CO}_2_{(g)} + 3 \text{H}_2\text{O}_{(l)}$ (hydrocarbon combustion)
v. $3 \text{Ca}_{(s)} + \text{N}_2_{(g)} \rightarrow \text{Ca}_3\text{N}_2_{(s)}$ (formation)
w. $\text{Fe}_2\text{O}_3_{(s)} + 3 \text{H}_2_{(g)} \rightarrow 2 \text{Fe}_{(s)} + 3 \text{H}_2\text{O}_{(l)}$ (single replacement)
x. $2 \text{C}_{15}\text{H}_{30(l)} + 45 \text{O}_2_{(g)} \rightarrow 30 \text{CO}_2_{(g)} + 30 \text{H}_2\text{O}_{(g)}$ (hydrocarbon combustion)
y. $2 \text{BN}_{(s)} + 3 \text{F}_2_{(g)} \rightarrow 2 \text{BF}_3_{(s)} + \text{N}_2_{(g)}$ (single replacement)
z. $2 \text{C}_{12}\text{H}_{26(l)} + 37 \text{O}_2_{(g)} \rightarrow 24 \text{CO}_2_{(g)} + 26 \text{H}_2\text{O}_{(g)}$ (hydrocarbon combustion)

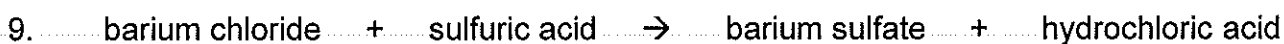
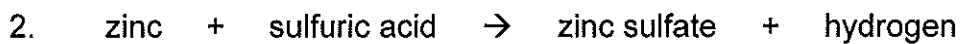
Question 2

- a. $\text{Pb}(\text{NO}_3)_2_{(aq)} + 2 \text{NaI}_{(aq)} \rightarrow \text{PbI}_2_{(s)} + 2 \text{NaNO}_3_{(aq)}$ (double replacement)
b. $8 \text{ZnS}_{(s)} + 4 \text{O}_2_{(g)} \rightarrow 8 \text{ZnO}_{(s)} + \text{S}_8_{(s)}$ (single replacement)
c. $2 \text{C}_4\text{H}_{10(l)} + 13 \text{O}_2_{(g)} \rightarrow 8 \text{CO}_2_{(g)} + 10 \text{H}_2\text{O}_{(g)}$ (hydrocarbon combustion)
d. $\text{Ba}(\text{OH})_2_{(aq)} + 2 \text{HCl}_{(aq)} \rightarrow \text{BaCl}_2_{(aq)} + 2 \text{H}_2\text{O}_{(l)}$ (double replacement)
e. $\text{Cu}_{(s)} + 2 \text{AgNO}_3_{(aq)} \rightarrow \text{Cu}(\text{NO}_3)_2_{(aq)} + 2 \text{Ag}_{(s)}$ (single replacement)
f. $\text{S}_8_{(s)} + 8 \text{O}_2_{(g)} \rightarrow 8 \text{SO}_2_{(g)}$ (formation)
g. $\text{Al}_2(\text{SO}_4)_3_{(aq)} + 3 \text{Ca}(\text{OH})_2_{(aq)} \rightarrow 2 \text{Al}(\text{OH})_3_{(s)} + 3 \text{CaSO}_4_{(s)}$ (double replacement)
h. $\text{Zn}_{(s)} + \text{H}_2\text{SO}_4_{(aq)} \rightarrow \text{ZnSO}_4_{(aq)} + \text{H}_2_{(g)}$ (single replacement)
i. $2 \text{Al}_{(s)} + 3 \text{Cl}_2_{(g)} \rightarrow 2 \text{AlCl}_3_{(s)}$ (formation)
j. $\text{C}_{12}\text{H}_{22}\text{O}_{11(s)} + 12 \text{O}_2_{(g)} \rightarrow 12 \text{CO}_2_{(g)} + 11 \text{H}_2\text{O}_{(l)}$ (hydrocarbon combustion)

Worksheet #1: Writing and Balancing Formula Equations

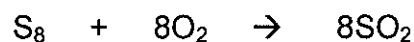
Step 1: Write each formula and balance each formula using SUBSCRIPTS.

Step 2: Balance the overall equation using coefficients.



Worksheet #1: Writing and Balancing Formula Equations

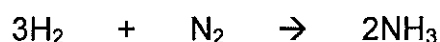
1. sulfur + oxygen → sulfur dioxide



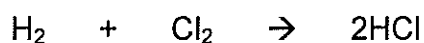
2. zinc + sulfuric acid → zinc sulfate + hydrogen



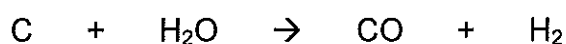
3. hydrogen + nitrogen → ammonia



4. hydrogen + chlorine → hydrogen chloride



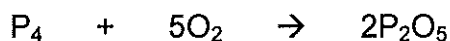
5. carbon + water → carbon monoxide + hydrogen



6. calcium oxide + water → calcium hydroxide



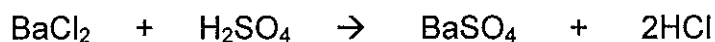
7. phosphorus + oxygen → diphosphorus pentoxide



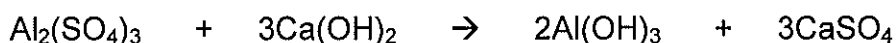
8. hydrochloric acid + sodium hydroxide → sodium chloride + water



9. barium chloride + sulfuric acid → barium sulfate + hydrochloric acid



10. aluminum sulfate + calcium hydroxide → aluminum hydroxide + calcium sulfate



11. ethane (C₂H₆) + oxygen → carbon dioxide + water



12. aluminum oxide → aluminum + oxygen



Balancing Reactions Worksheet

Balance the following reactions and identify the type of reaction each represents.

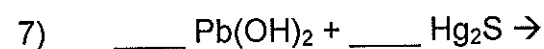
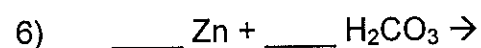
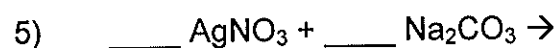
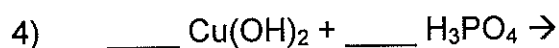
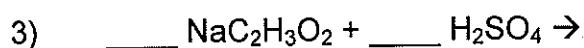
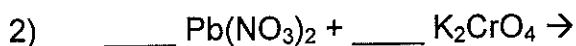
- 1) $\text{PbO}_2 \rightarrow \text{PbO} + \text{O}_2$
- 2) $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$
- 3) $\text{Fe}_2(\text{SO}_4)_3 + \text{Ba}(\text{OH})_2 \rightarrow \text{BaSO}_4 + \text{Fe}(\text{OH})_3$
- 4) $\text{Al} + \text{CuSO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + \text{Cu}$
- 5) $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
- 6) $\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$
- 7) $\text{FeCl}_2 + \text{Na}_3\text{PO}_4 \rightarrow \text{Fe}_3(\text{PO}_4)_2 + \text{NaCl}$
- 8) $\text{HgO} \rightarrow \text{Hg} + \text{O}_2$
- 9) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \rightarrow \text{CaSO}_4 + \text{H}_2\text{O}$
- 10) $\text{Bi}(\text{NO}_3)_3 + \text{NaOH} \rightarrow \text{Bi}(\text{OH})_3 + \text{NaNO}_3$
- 11) $\text{FeS} + \text{HBr} \rightarrow \text{FeBr}_2 + \text{H}_2\text{S}$
- 12) $\text{Zn}(\text{OH})_2 + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2\text{O}$
- 13) $\text{P}_2\text{O}_5 + \text{H}_2\text{O} \rightarrow \text{H}_3\text{PO}_4$
- 14) $\text{CaI}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{HI} + \text{CaSO}_4$
- 15) $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_3$

Solutions

- 1) $2\text{PbO}_2 \rightarrow 2\text{PbO} + \text{O}_2$ Decomposition
 - 2) $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$ Single Replacement
 - 3) $\text{Fe}_2(\text{SO}_4)_3 + 3\text{Ba}(\text{OH})_2 \rightarrow 3\text{BaSO}_4 + 2\text{Fe}(\text{OH})_3$ Double Replacement
 - 4) $2\text{Al} + 3\text{CuSO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + 3\text{Cu}$ Single Replacement
 - 5) $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$ Decomposition
 - 6) $3\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$ Synthesis
 - 7) $3\text{FeCl}_2 + 2\text{Na}_3\text{PO}_4 \rightarrow \text{Fe}_3(\text{PO}_4)_2 + 6\text{NaCl}$ Double Replacement
 - 8) $2\text{HgO} \rightarrow 2\text{Hg} + \text{O}_2$ Decomposition
 - 9) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \rightarrow \text{CaSO}_4 + 2\text{H}_2\text{O}$ Decomposition
 - 10) $\text{Bi}(\text{NO}_3)_3 + 3\text{NaOH} \rightarrow \text{Bi}(\text{OH})_3 + 3\text{NaNO}_3$ Double Replacement
 - 11) $\text{FeS} + 2\text{HBr} \rightarrow \text{FeBr}_2 + \text{H}_2\text{S}$ Double Replacement
 - 12) $\text{Zn}(\text{OH})_2 + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + 2\text{H}_2\text{O}$ Double Replacement
 - 13) $\text{P}_2\text{O}_5 + 3\text{H}_2\text{O} \rightarrow 2\text{H}_3\text{PO}_4$ Synthesis
 - 14) $\text{CaI}_2 + \text{H}_2\text{SO}_4 \rightarrow 2\text{HI} + \text{CaSO}_4$ Double Replacement
 - 15) $2\text{Al} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3$ Synthesis
-

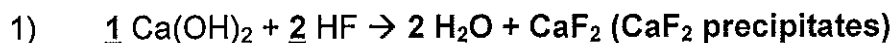
Reaction Products Worksheet

For each of the following reactions, determine what the products of each reaction will be. When you have predicted the products, balance the equation and use a table of solubility products to determine which of the products (if any) will precipitate. Assume all reactions take place in water.



Reaction Products Worksheet - Key

For each of the following reactions, determine what the products of each reaction will be. When you have predicted the products, balance the equation and use a table of solubility products to determine which of the products (if any) will precipitate. Assume all reactions take place in water.

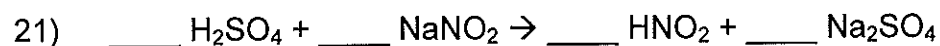
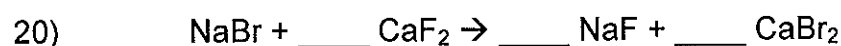
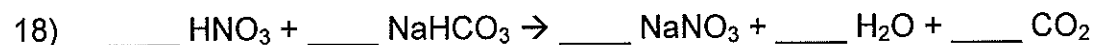
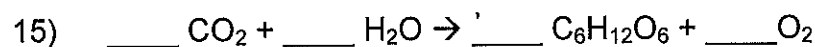
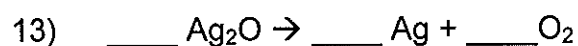
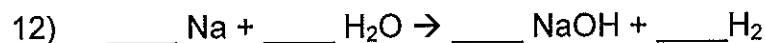
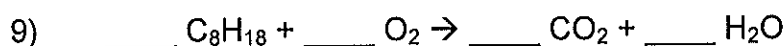
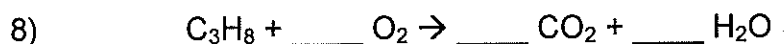
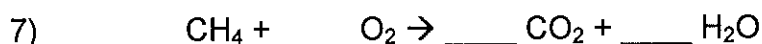
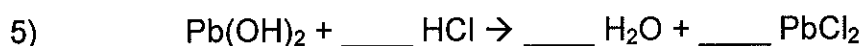
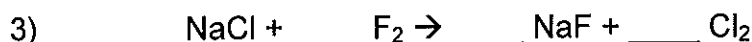
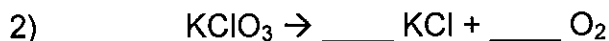


copper (II) phosphate precipitates



Balancing Chemical Equations

Balance the equations below:



Balancing Chemical Equations – Answer Key

Balance the equations below:

