

<b>STO.1</b>	Balance a chemical equation.
<b>STO.2</b>	Identify the parts of a chemical equation.
<b>RXN.1</b>	Describe a chemical reaction using words and symbolic equations.

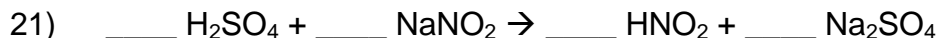
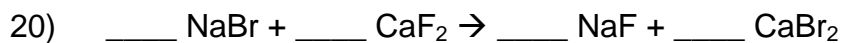
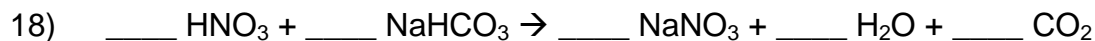
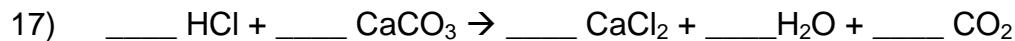
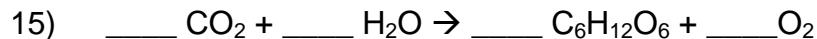
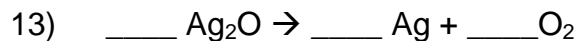
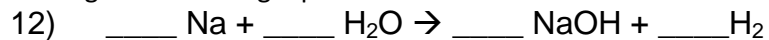
*For each of the following problems, write complete chemical equations to describe the chemical process taking place. Balance the equations.*

- 1) When lithium hydroxide pellets are added to a solution of sulfuric acid ( $\text{H}_2\text{SO}_4$ ), lithium sulfate and water are formed.
- 2) Magnesium reacts with sodium fluoride to produce magnesium fluoride and elemental sodium.
- 3) If a copper coil is placed into a solution of silver nitrate, silver crystals form and copper (I) nitrate is generated.
- 4) When crystalline  $\text{C}_6\text{H}_{12}\text{O}_6$  is burned in oxygen, carbon dioxide and water vapor are formed.
- 5) Calcium carbonate combines with hydrochloric acid (HCl) to produce calcium chloride, water and carbon dioxide gas.

*Balance the equations below:*

- 1) \_\_\_\_  $\text{N}_2$  + \_\_\_\_  $\text{H}_2$   $\rightarrow$  \_\_\_\_  $\text{NH}_3$
- 2) \_\_\_\_  $\text{KClO}_3$   $\rightarrow$  \_\_\_\_  $\text{KCl}$  + \_\_\_\_  $\text{O}_2$
- 3) \_\_\_\_  $\text{NaCl}$  + \_\_\_\_  $\text{F}_2$   $\rightarrow$  \_\_\_\_  $\text{NaF}$  + \_\_\_\_  $\text{Cl}_2$
- 4) \_\_\_\_  $\text{H}_2$  + \_\_\_\_  $\text{O}_2$   $\rightarrow$  \_\_\_\_  $\text{H}_2\text{O}$
- 5) \_\_\_\_  $\text{Pb}(\text{OH})_2$  + \_\_\_\_  $\text{HCl}$   $\rightarrow$  \_\_\_\_  $\text{H}_2\text{O}$  + \_\_\_\_  $\text{PbCl}_2$
- 6) \_\_\_\_  $\text{AlBr}_3$  + \_\_\_\_  $\text{K}_2\text{SO}_4$   $\rightarrow$  \_\_\_\_  $\text{KBr}$  + \_\_\_\_  $\text{Al}_2(\text{SO}_4)_3$
- 7) \_\_\_\_  $\text{CH}_4$  + \_\_\_\_  $\text{O}_2$   $\rightarrow$  \_\_\_\_  $\text{CO}_2$  + \_\_\_\_  $\text{H}_2\text{O}$
- 8) \_\_\_\_  $\text{C}_3\text{H}_8$  + \_\_\_\_  $\text{O}_2$   $\rightarrow$  \_\_\_\_  $\text{CO}_2$  + \_\_\_\_  $\text{H}_2\text{O}$
- 9) \_\_\_\_  $\text{C}_8\text{H}_{18}$  + \_\_\_\_  $\text{O}_2$   $\rightarrow$  \_\_\_\_  $\text{CO}_2$  + \_\_\_\_  $\text{H}_2\text{O}$
- 10) \_\_\_\_  $\text{FeCl}_3$  + \_\_\_\_  $\text{NaOH}$   $\rightarrow$  \_\_\_\_  $\text{Fe}(\text{OH})_3$  + \_\_\_\_  $\text{NaCl}$
- 11) \_\_\_\_  $\text{P}$  + \_\_\_\_  $\text{O}_2$   $\rightarrow$  \_\_\_\_  $\text{P}_2\text{O}_5$

## Writing and Balancing Equations Worksheet



## 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.



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



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



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



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



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- 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.



## 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)  $1 \text{ K} + 1 \text{ MgBr} \rightarrow 1 \text{ KBr} + 1 \text{ Mg}$
- 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)  $1 \text{ H}_2\text{SO}_4 + 2 \text{ NaNO}_2 \rightarrow 2 \text{ HNO}_2 + 1 \text{ Na}_2\text{SO}_4$