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Writing and Balancing Equations Worksheet

STO.1	Balance a chemical equation.
STO.2	Identify the parts of a chemical equation.
RXN.1	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 (H_2SO_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 $C_6H_{12}O_6$ 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) ____ N_2 + ____ H_2 → ____ NH_3

2) ____ $KClO_3$ → ____ KCl + ____ O_2

3) ____ NaCl + ____ F_2 → ____ NaF + ____ Cl_2

4) ____ H_2 + ____ O_2 → ____ H_2O

5) ____ $Pb(OH)_2$ + ____ HCl → ____ H_2O + ____ $PbCl_2$

6) ____ $AlBr_3$ + ____ K_2SO_4 → ____ KBr + ____ $Al_2(SO_4)_3$

7) ____ CH_4 + ____ O_2 → ____ CO_2 + ____ H_2O

8) ____ C_3H_8 + ____ O_2 → ____ CO_2 + ____ H_2O

9) ____ C_8H_{18} + ____ O_2 → ____ CO_2 + ____ H_2O

10) ____ $FeCl_3$ + ____ NaOH → ____ $Fe(OH)_3$ + ____NaCl

11) ____ P + ____O_2 → ____P_2O_5

12) ____ Na + ____ H_2O → ____ NaOH + ____H_2

13) ____ Ag_2O → ____ Ag + ____O_2

14) ____ S_8 + ____O_2 → ____ SO_3

15) ____ CO_2 + ____ H_2O → ____ $C_6H_{12}O_6$ + ____O_2

16) ____ K + ____ $MgBr_2$ → ____ KBr + ____ Mg

17) ____ HCl + ____ $CaCO_3$ → ____ $CaCl_2$ + ____H_2O + ____ CO_2

18) ____ HNO_3 + ____ $NaHCO_3$ → ____ $NaNO_3$ + ____ H_2O + ____ CO_2

19) ____ H_2O + ____ O_2 → ____ H_2O_2

20) ____ NaBr + ____ CaF_2 → ____ NaF + ____ $CaBr_2$

21) ____ H_2SO_4 + ____ $NaNO_2$ → ____ HNO_2 + ____ Na_2SO_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.

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Writing and Balancing Equations Worksheet

Word Equations – Answer Key

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

$$Zn + Pb(NO_3)_2 \rightarrow Zn(NO_3)_2 + Pb$$

_____

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

$$2\ AlBr_3 + 3\ Cl_2 \rightarrow 2\ AlCl_3 + 3\ Br_2$$

_____

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

$$2\ Na_3PO_4 + 3\ CaCl_2 \rightarrow 6\ NaCl + Ca_3(PO_4)_2$$

_____

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

$$2\ K + Cl_2 \rightarrow 2\ KCl$$

_____

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

$$2\ Al + 6\ HCl \rightarrow 3\ H_2 + 2\ AlCl_3$$

_____

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

$$3\ Ca(OH)_2 + 2\ H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 6\ H_2O$$

_____

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

$$Cu + 2\ H_2SO_4 \rightarrow CuSO_4 + 2\ H_2O + SO_2$$

_____

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

$$2\ H_2 + 2\ NO \rightarrow 2\ H_2O + N_2$$

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Writing and Balancing Equations Worksheet

Balancing Chemical Equations – Answer Key

Balance the equations below:

1) **1** N_2 + **3** H_2 → **2** NH_3

2) **2** $KClO_3$ → **2** KCl + **3** O_2

3) **2** NaCl + **1** F_2 → **2** NaF + **1** Cl_2

4) **2** H_2 + **1** O_2 → **2** H_2O

5) **1** $Pb(OH)_2$ + **2** HCl → **2** H_2O + **1** $PbCl_2$

6) **2** $AlBr_3$ + **3** K_2SO_4 → **6** KBr + **1** $Al_2(SO_4)_3$

7) **1** CH_4 + **2** O_2 → **1** CO_2 + **2** H_2O

8) **1** C_3H_8 + **5** O_2 → **3** CO_2 + **4** H_2O

9) **2** C_8H_{18} + **25** O_2 → **16** CO_2 + **18** H_2O

10) **1** $FeCl_3$ + **3** NaOH → **1** $Fe(OH)_3$ + **3** NaCl

11) **4** P + **5** O_2 → **2** P_2O_5

12) **2** Na + **2** H_2O → **2** NaOH + **1** H_2

13) **2** Ag_2O → **4** Ag + **1** O_2

14) **1** S_8 + **12** O_2 → **8** SO_3

15) **6** CO_2 + **6** H_2O → **1** $C_6H_{12}O_6$ + **6** O_2

16) **1** K + **1** MgBr → **1** KBr + **1** Mg

17) **2** HCl + **1** $CaCO_3$ → **1** $CaCl_2$ + **1** H_2O + **1** CO_2

18) **1** HNO_3 + **1** $NaHCO_3$ → **1** $NaNO_3$ + **1** H_2O + **1** CO_2

19) **2** H_2O + **1** O_2 → **2** H_2O_2

20) **2** NaBr + **1** CaF_2 → **2** NaF + **1** $CaBr_2$

21) **1** H_2SO_4 + **2** $NaNO_2$ → **2** HNO_2 + **1** Na_2SO_4