

Chemical Equations Practice Quiz

See pictures @ front of class

C 1) Which of the following formula best describes the molecules shown in the box?
 a) PH_5 b) CH_4 c) CO_2 d) NH_3

D 2) Which of the following formula best describes the molecules shown in the box?
 a) 3CH_4 b) 4CH_4 c) 3CO_2 d) 4NH_3

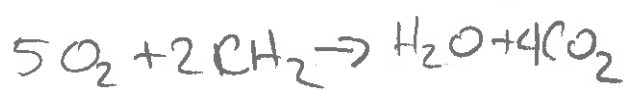
B 3) Which of the following formula best describes the molecules shown in the box?
 a) 5CH_4 c) $3\text{CH}_4 + 2\text{CO}_2$
 b) $2\text{CH}_4 + 3\text{O}_2$ d) $2\text{CH}_4 + 3\text{CO}_2$

C 4) How many molecules are on the REACTANT side?
 a) 7 b) 5 c) 3 d) 2

B 5) Is the above reaction BALANCED?
 a) Yes b) No

B 6) Which of the following is the most likely chemical equation that describes the above reaction?
 a) $\text{N}_2\text{O}_5 + \text{NO} \rightarrow 3\text{NO}_2$
 b) $\text{Mg} + 2\text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2 + \text{H}_2$
 c) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
 d) $2\text{Al} + \text{Fe}_2\text{O}_3 \rightarrow 2\text{Fe} + \text{Al}_2\text{O}_3$

C 7) If the reactant side is written as $5\text{O}_2 + 2\text{CH}_2$, then how should the product side be written?
 a) $2\text{O}_2 + 5\text{CH}_2$ c) $\text{H}_2\text{O} + 4\text{CO}_2$
 b) $5\text{O}_2 + 2\text{CH}_2$ d) $4\text{H}_2\text{O} + \text{CO}_2$



B 8) Is the above reaction BALANCED?
 a) Yes b) No

B 9) What is missing from the reactant side?
 a) 2O_2 c) H_2O
 b) 2CH_2 d) CO_2

C 10) What are the missing coefficients in the following equation? (Show your work)



- a) 1, 2, 1, 3 b) 0, 2, 1, 3 c) 4, 5, 4, 6 d) 4, 6, 4, 6

Name: _____ Period: _____ Date: _____

Practice Quiz: Chemical Reactions

Multiple Choice: Write the letter representing the best answer in the blank space in front of each question.

Use the equation below to answer questions 1 - 5.



- B 1) Which molecule(s) are on the product side?
- | | |
|------------------------------------------------|---------------------|
| a. Al and H_2SO_4 | c. Al, S, O, and H. |
| b. $\text{Al}(\text{SO}_4)_3$ and H_2 | d. The right side |

- A 2) Which molecule(s) are on the reactant side?
- | | |
|------------------------------------------------|---------------------|
| a. Al and H_2SO_4 | c. Al, S, O, and H. |
| b. $\text{Al}(\text{SO}_4)_3$ and H_2 | d. The left side |

- D 3) What does the '+' symbol mean?
- | | |
|-----------------|-----------------------|
| a. 'and' | c. 'forms bonds with' |
| b. 'turns into' | d. 'plus' |

- A 4) How many oxygen atoms are on the product side?
- | | |
|-------|------|
| a. 12 | c. 4 |
| b. 7 | d. 3 |

- D 5) How many molecules of aluminum sulfate are on the reactant side?
- | | |
|------|------|
| a. 3 | c. 1 |
| b. 2 | d. 0 |

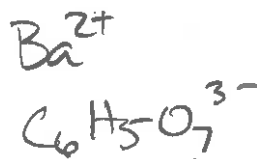
- D 6) Which of the following ions is NOT a cation?
- | | |
|----------------|-------------------|
| a. Calcium ion | c. Iron (III) ion |
| b. Barium ion | d. Sulfide ion |

- B 7) Which of the following ions is NOT an anion?
- | | |
|--------------|------------------|
| a. Oxide ion | c. Carbonate ion |
| b. Lead ion | d. Carbide ion |

- A 8) Which of the following is a monoatomic ion?
- | | |
|--------------------------------|-----------------------|
| a. CO Cl^- | c. NH_4^+ |
| b. ClO^- | d. PO_4^{3-} |

D 19) Which of the following is the correct formula for barium citrate?

- a. $\text{BaC}_6\text{H}_5\text{O}_7$ c. $\text{Ba}(\text{C}_6\text{H}_5\text{O}_7)_2$
b. $\text{Ba}_2\text{C}_6\text{H}_5\text{O}_7$ d. $\text{Ba}_3(\text{C}_6\text{H}_5\text{O}_7)_2$



A 20) Which type of reaction breaks bigger molecules into smaller molecules?

- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

C 21) Which type of reaction requires O_2 as a reactant?

- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

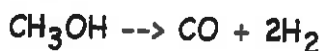
B 22) Which type of reaction replaces the cation in an ionic compound?

- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

D 23) Which type of reaction starts out with smaller molecules and combines them to form a larger molecule?

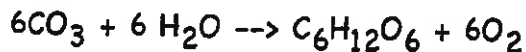
- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

A 24) Which type of reaction is shown by the equation below?



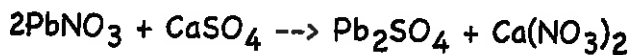
- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

D 25) Which type of reaction is shown by the equation below?



- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

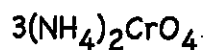
26) Which type of reaction is shown by the equation below?



- a. Decomposition c. Combustion
b. Single displacement d. Synthesis

Double Displacement.

Use the following symbol to answer questions 27 through 30.



C 27) How many atoms of hydrogen (H) are present?

- a. 4 c. 16
b. 8 d. 24

C 28) How many atoms of chromium (Cr) are present?

- a. 1 c. 3
b. 2 d. 4

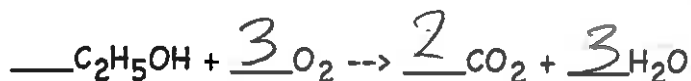
D 29) How many atoms of nitrogen (N) are present?

- a. 1 c. 3
b. 2 d. 6

D 30) How many molecules of ammonium (NH_4) are present?

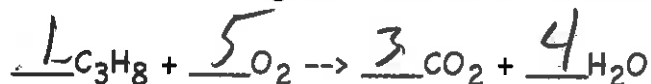
- a. 1 c. 3
b. 2 d. 6

C 31) What are the missing coefficients in the following equation?



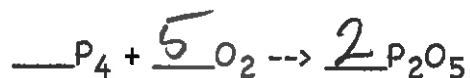
- a. 0, 2, 2, 3 c. 0, 3, 2, 3
b. 1, 2, 2, 3 d. 1, 3, 2, 3

D 32) What are the missing coefficients in the following equation?



- a. 2, 4, 3, 4 c. 1, 6, 3, 4
b. 0, 5, 3, 4 d. 1, 5, 3, 4

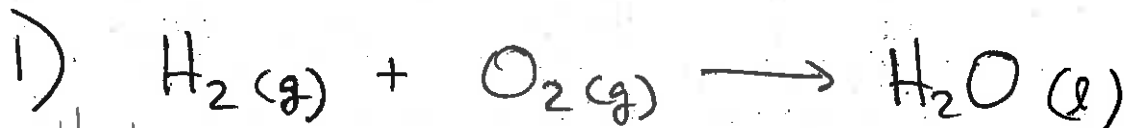
A 33) What are the missing coefficients in the following equation?



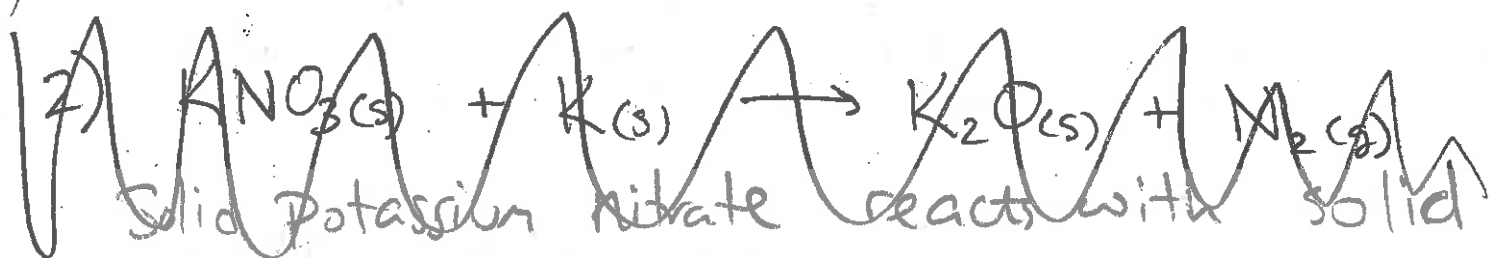
- a. 1, 5, 2 c. 1, 6, 3
b. 0, 5, 2 d. 1, 5, 3

word equations

-restate the following equations as word or symbol equations as needed.



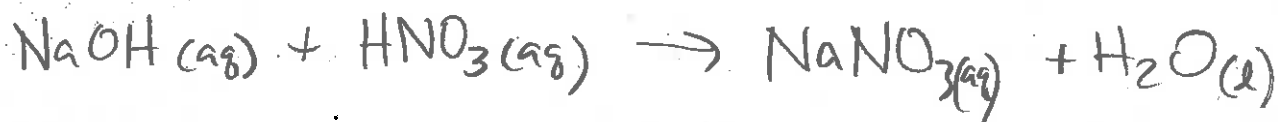
Hydrogen gas reacts with oxygen gas to make liquid water.



3) Solid magnesium metal reacts with liquid water to form solid magnesium hydroxide and hydrogen gas.



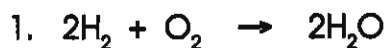
4) Aqueous sodium hydroxide reacts with aqueous nitric acid (HNO_3) to yield aqueous sodium nitrate and liquid water.



CLASSIFICATION OF CHEMICAL REACTIONS

Name _____

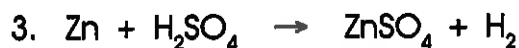
Classify the reactions below as ^{combination} synthesis, decomposition, ^{exchange} single replacement (cationic or anionic), or double ^{exchange} replacement.



combination



decomposition



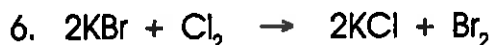
single exchange



combination



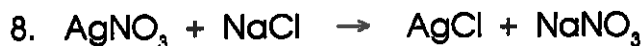
decomposition



single exchange



combination



double exchange



combination

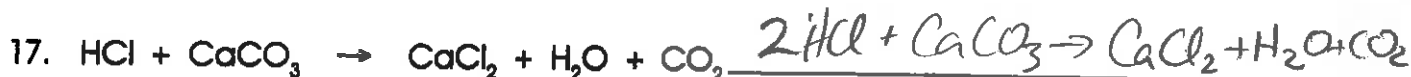
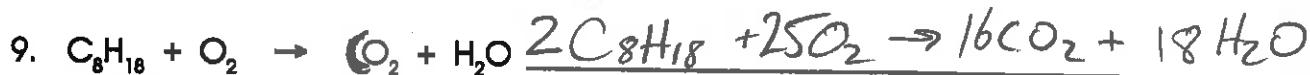
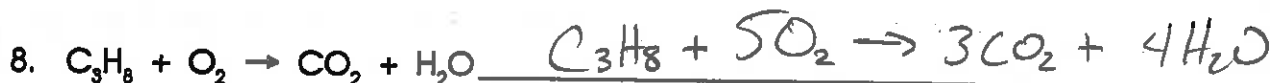
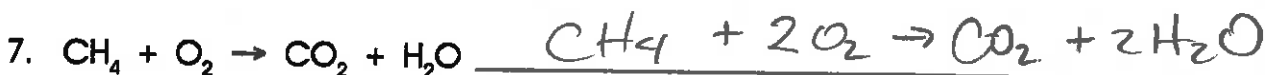
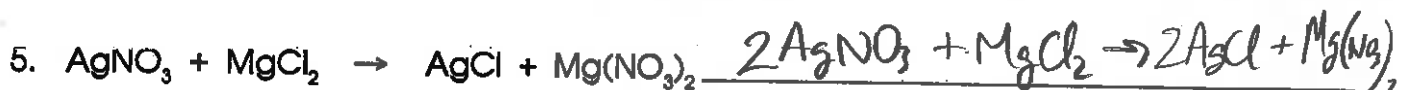
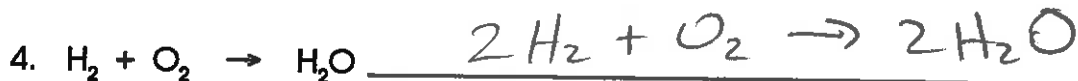
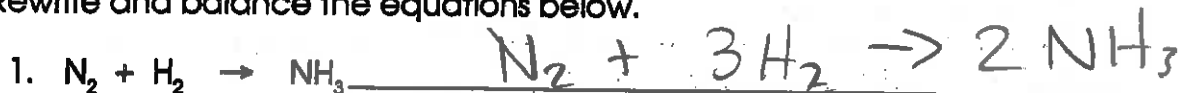


double exchange

BALANCING CHEMICAL EQUATIONS

Name _____

Rewrite and balance the equations below.





Key Terms

physical change
 coefficient
 formula unit
 combination reaction
 decomposition reaction
 single exchange reaction
 (single replacement)
 double exchange reaction
 (double replacement)

SUMMARY

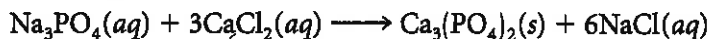
Toxic Changes

Toxins Update

A toxic substance causes an undesirable chemical reaction, producing a harmful or unhealthy change in a living system. Chemical equations keep track of these changes and allow you to predict what you will observe when compounds combine. Becoming familiar with chemical equations is the first step in understanding these chemical changes.

Review Exercises

- Why is it difficult to identify a physical or chemical change through observations alone? *You can't always see a chem. change.*
- Based on the chemical equation for a reaction, can you tell if any of the substances are toxic? *yes*
- Consider the equation for the formation of a kidney stone.



- Is each reactant bonded ionically or covalently? How do you know? *ionically on products*
 - Is this a combination reaction, decomposition reaction, single exchange reaction, or double exchange reaction?
 - Is this a chemical change or a physical change?
 - How does a balanced reaction show that matter is conserved? *same # of atoms on each side*
 - What is the chemical name of the solid that makes up a kidney stone? *Calcium Phosphate.*
- Copy and balance these chemical equations.
 - $\text{N}_2(\text{g}) + 2\text{H}_2(\text{g}) \longrightarrow \text{N}_2\text{H}_4(\text{g})$
 - ~~$\text{KNO}_3(\text{s}) + \text{K}(\text{s}) \longrightarrow \text{K}_2\text{O}(\text{s}) + \text{N}_2(\text{g})$~~
 - $\text{H}_2\text{SO}_4(\text{aq}) + 2\text{NaCN}(\text{aq}) \longrightarrow 2\text{HCN}(\text{g}) + \text{Na}_2\text{SO}_4(\text{aq})$
 - $2\text{H}_3\text{PO}_4(\text{aq}) + 3\text{Ca}(\text{OH})_2(\text{aq}) \longrightarrow \text{Ca}_3(\text{PO}_4)_2(\text{aq}) + 6\text{H}_2\text{O}(\text{l})$
 - $\text{C}_3\text{H}_8(\text{g}) + 5\text{O}_2(\text{g}) \longrightarrow 3\text{CO}_2(\text{g}) + 4\text{H}_2\text{O}(\text{l})$
 - $2\text{H}_2\text{S}(\text{g}) + 3\text{O}_2(\text{g}) \longrightarrow 2\text{SO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l})$
 - $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2\text{H}_2\text{O}(\text{l})$

WEB



RESEARCH

PROJECT

Toxins in the Environment

Research a potentially toxic substance. (Your teacher may assign you one.) Find out where in your environment you might find this substance and describe its effects on the body. Prepare a short report.