Name _____ Class _____ Date _____

Skills Worksheet

Directed Reading B

Section: Chemical Formulas and Equations

CHEMICAL FORMULAS

1. All known substances are formed from about 100 elements.

2. A combination of chemical symbols and numbers that represents a substance is called a(n) chemical formula.

3. What does a chemical formula show?

A chemical formula shows how many atoms of each kind of element are present in a molecule.

a. **4.** The subscript in the chemical formula H_2O tells you there are two
- **a.** atoms of hydrogen in the molecule.
- **b.** electrons on the hydrogen atom in the molecule.
- **c.** elements in the molecule.
- **d.** atoms of oxygen in the molecule.

a. O2 **5.** What is the chemical formula for oxygen?
- **a.** O_2
- **b.** $C_6H_{12}O_6$
- **c.** H_2O
- **d.** $Ca(NO_3)_2$

c. H2O **6.** What is the chemical formula for water?
- **a.** O_2
- **b.** $C_6H_{12}O_6$
- **c.** H_2O
- **d.** $Ca(NO_3)_2$

b. C6H12O6 **7.** What is the chemical formula for glucose?
- **a.** O_2
- **b.** $C_6H_{12}O_6$
- **c.** H_2O
- **d.** $Ca(NO_3)_2$

8. Simple covalent compounds are usually composed of two nonmetals, like H2O, hydrogen and oxygen are nonmetals.

9. The formula for dinitrogen monoxide is N2O.

10. The formula for carbon dioxide is CO2.

11. Ionic compounds are composed of a(n) metal and a(n) nonmetal.

12. The overall charge of an ionic compound is zero net charge.

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Directed Reading B *continued*

Write the formula for each of the following ionic compounds.

13. sodium chloride NaCl

14. magnesium chloride MgCl2

CHEMICAL EQUATIONS

15. What do musical notations and chemical equations have in common?

Musical notation uses symbols to represent quantities of time, like half note = 4 eighth notes

In chemical equations, symbols (numbers) tells us the quantities of atoms to use.

16. When chemical symbols and formulas are used to describe a chemical reaction, it is called a(n) Chemical equation.

17. A substance that forms in a chemical reaction is called a(n) products.

18. A substance or molecule that participates in a chemical reaction is called a(n) reactants.

19. When carbon reacts with oxygen to form carbon dioxide, carbon dioxide is the product.

20. What will happen if the wrong chemical symbol or formula is used in a chemical equation?

If the recipe (chemical equation) says the wrong ingredient (reactant) there could be a wrong explosive product.

21. In a chemical reaction, atoms are never gained or lost.

22. Antoine Lavoisier's work led to the law of conservation of mass.

23. What does the law of conservation of mass state?

The law of conservation of mass states that mass is neither created nor destroyed in chemical and physical changes.

Directed Reading B *continued*

24. A chemical equation must show the same numbers and kinds of _____ atoms _____ on both sides of the arrow.

25. The number placed in front of a chemical symbol or formula is called a(n) _____ coefficient _____.

26. How many oxygen atoms are contained in the formula $2H_2O$?

_____ 2 Oxygen atoms _____

27. When you balance an equation, only _____ coefficients _____ are changed, not _____ subscripts _____.

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Skills Worksheet

Vocabulary and Section Summary B

Forming New Substances

VOCABULARY

After you finish reading the section, try this puzzle! Fill in the blanks with the correct terms. Then, find the words in the word search puzzle below. Words may be hidden horizontally, vertically, backward, or diagonally.

1. In endothermic reactions, energy is taken in.

2. A chemical reaction is the process by which one or more substances undergo change to produce one or more new substances with different properties.

3. The law of conservation of energy states that energy cannot be created or destroyed.

4. In exothermic reactions, energy is released.

5. A solid that is produced as a result of a chemical reaction in solution is a(n) precipitate.

P	B	I	S	H	T	P	I	I	E	B	L	Y	N	Z	V	F	L	P	S
W	O	E	V	V	C	U	N	X	P	O	C	R	G	I	Z	E	U	C	L
E	Q	V	P	F	A	D	O	P	D	E	U	Q	E	R	Z	Z	M	O	C
A	N	N	L	Y	D	T	F	E	H	T	W	E	Q	T	E	Y	B	D	J
C	U	D	M	A	H	J	M	F	P	L	B	H	W	I	N	N	U	E	J
Z	Y	J	O	E	F	N	J	B	H	X	R	D	L	P	D	G	E	W	G
S	A	C	R	T	D	L	A	Q	A	U	M	I	G	L	Q	L	C	M	C
U	I	M	K	S	H	Z	Z	X	D	G	N	J	R	G	D	B	Z	C	I
L	I	M	A	Q	N	E	P	Q	U	W	Q	W	O	K	Q	H	G	R	Z
C	B	U	B	J	S	Q	R	Y	I	B	A	C	N	W	Q	D	S	I	K
O	L	J	Y	P	V	G	E	M	L	P	K	W	X	U	P	N	K	U	T
T	X	Z	Q	U	Z	S	C	D	I	P	Z	U	U	B	N	N	S	L	D
N	P	F	X	I	V	R	I	Z	T	C	T	O	S	V	C	E	I	W	T
H	X	S	X	A	K	K	P	F	Z	F	C	G	X	P	W	L	C	T	G
Z	R	V	U	B	N	L	I	W	L	W	E	R	G	Y	O	S	X	B	F
E	M	O	E	Z	D	O	T	Q	S	Y	K	S	A	V	T	R	B	Y	V
J	N	D	S	S	Q	P	A	F	T	J	D	Q	R	F	E	F	G	V	K
I	N	H	P	L	O	G	T	L	V	V	R	A	X	H	M	F	R	G	W
K	K	G	J	Q	Q	B	E	R	U	H	E	H	B	E	N	S	X	R	D
N	O	I	T	C	A	E	R	R	V	T	N	U	V	X	Y	J	S	L	Q