



## CHEMICAL EQUATIONS

1 Which of the following is a chemical reaction?

- A Sodium and chlorine atoms bond to form salt molecules
- B Ice melts to form water
- C Carbon dioxide freezes to form dry ice
- D Salt and water mix to form salt water

2 In the equation  $H_2 + O \rightarrow H_2O$ , what are the reactants?

- A Hydrogen atoms
- B Hydrogen and oxygen atoms
- C Water molecules
- D Ice crystals

3 Sulfuric acid is made of two hydrogen atoms (H), one sulfur atom (S), and four oxygen atoms (O). What is its molecular formula?

- A  $2H_4SO$
- B  $H_4S_2O$
- C  $H_2SO_4$
- D  $H_2S_2O_4$

4 What is the best synonym for the word "stoichiometry"?

- A Combining atoms
- B Balancing chemical equations
- C Discovering new chemical formulas
- D Breaking the chemical bonds that hold molecules together

5 The chemical symbol "Ni" most likely represents:

- A Carbon
- B Antimony
- C Lead
- D Nickel

6 How do the products of chemical reactions compare to their reactants?

- A The products usually weigh more than the reactants
- B The products often have completely different properties than the reactants
- C The products usually have more atoms than the reactants
- D The products are usually more toxic than the reactants

7 What's the problem with this chemical equation:  $H_2 + O_2 = H_2O$ ?

- A There's a missing hydrogen in the reactants
- B There's a missing oxygen in the product
- C There's an additional oxygen in the product
- D There's an additional hydrogen in the reactants

8 What's the easiest way to balance a chemical equation?

- A Trial and error
- B Using the periodic table
- C Complex algebra
- D Calculus

9 Which reactant is missing from the following equation?  $X + PO_4 \rightarrow H_3PO_4$

- A One hydrogen atom
- B One phosphorus atom
- C Three hydrogen atoms
- D One oxygen atom

10 What is the product of the following equation?  $2Na + S_2O_3 \rightarrow$

- A  $Na_2S_2O_3$
- B  $Na_4S_2O_3$
- C  $Na_2S_2O_5$
- D  $Na_2S_2O_3$



## CONSERVATION OF MASS

1 In science, a law is:

- A A rule governing what you are permitted to do
- B A generalization about how the physical universe works
- C A legal document that describes a rule of conduct
- D A statute enacted by a legislative body

2 What is true of a substance with a lot of mass?

- A It contains a lot of matter
- B It has a large volume
- C It has a high density
- D It has a low frequency

3 The law of conservation of mass says substances can neither be \_\_\_\_\_ nor \_\_\_\_\_.

- A Built; torn down
- B Blended together; separated
- C Created; destroyed
- D Condensed; extracted

4 How is weight different from mass?

- A Weight changes depending on gravity; mass stays constant throughout the universe
- B Weight is measured in grams; mass is measured in newtons
- C Weight can be converted to energy; mass cannot
- D Weight is measured with a scale; mass is measured with a triple-beam balance

5 Sodium and chlorine combine to form sodium chloride, or table salt. Sodium and chlorine are:

- A Producers
- B Products
- C Reactionaries
- D Reactants

6 When sodium and chlorine combine to form sodium chloride, sodium chloride is the:


- A Originator
- B Reactant
- C Product
- D Produce

7 4 grams of hydrogen and 32 grams of oxygen will combine to form:

- A 36 grams of water
- B 28 grams of hydroxide
- C 32 grams of oxygen
- D 36 grams of deuterium

8 In a chemical reaction, 4 grams of sodium must combine with how many grams of chlorine to produce 10 grams of table salt?

- A 4 grams
- B 6 grams
- C 8 grams
- D 10 grams

9  What was Antoine Lavoisier's contribution to the law of conservation of mass?

- A He was the first person to think of it
- B He was the first person to propose it in a scientific way
- C He came up with a widely-read, precise description
- D He was the first person to perform a chemical reaction

10 Which of the following describes a chemical reaction?

- A Oxygen interacts with iron to form rust
- B Ice melts into water
- C Carbon dioxide freezes to make dry ice
- D Rocks split apart over many years due to weathering

Additional notes: \_\_\_\_\_

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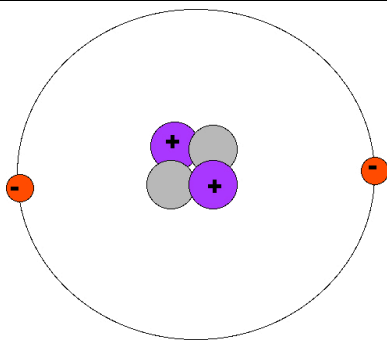
# Atomic Math Review

## The Rules:

- **Atomic Number** = the number of \_\_\_\_\_ or \_\_\_\_\_
- Atomic Mass = the number of \_\_\_\_\_ + \_\_\_\_\_
- Number of \_\_\_\_\_ = atomic mass - number of protons

Element	Atomic #	Atomic Mass	Protons	Neutrons	Electrons
Hydrogen			1		
	9				
		23			11
Chlorine					
		56	26		

Label the parts



of the atom:

# Grouping the Elements

Group #	Name	Valence Electrons (electrons in the outer level)	Reactivity
<b>1</b>	<i>Alkali Metals</i>	1	Very Reactive
<b>2</b>			
<b>3-12</b>			Less reactive than Group 2
<b>13</b>			
<b>14</b>			Varies
<b>15</b>			Varies
<b>16</b>			
<b>17</b>			
<b>18</b>			
<b>Hydrogen</b>			