

7.2 Chemical Equations

Chemistry Problem Set

Student Name: _____ Date: _____ Per. _____

Directions: Answer all open-ended questions in complete sentences, using evidence to support your answers. For math questions, show all of your work and include appropriate units and significant figures in your final answer to receive **FULL** credit.

1. The substances present before a chemical reaction takes place are called the _____, and the substances present after the reaction takes place are called the _____.
2. In an ordinary chemical reaction, _____ are neither created nor destroyed.
3. The notation "(g)" after a substance's formula indicates it exists in the _____ state.
4. In a chemical equation for a reaction, the notation "(aq)" after a substance's formula means that the substance is dissolved in _____.

Note: In some of the following problems, you will need to write a chemical formula from the name of the compound. It may help to review Chapter 4 or use the **INTERNET**.

5. If solid calcium carbonate is heated strongly, carbon dioxide gas is driven off, leaving a solid residue of calcium oxide. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

6. Liquefied propane gas is often used for cooking in rural areas away from natural gas lines. Propane burns in oxygen gas, producing carbon dioxide gas, water vapor, and heat. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

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7. If a sample of pure hydrogen gas is ignited very carefully, the hydrogen burns gently, combining with the oxygen gas of the air to form water vapor. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

8. Solid ammonium carbonate is used as the active ingredient in "smelling salts." When solid ammonium carbonate is heated, it decomposes into ammonia gas, carbon dioxide gas, and water vapor. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

9. Silver oxide solid may be decomposed by strong heating into silver metal and oxygen gas. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

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10. Methanol is an important industrial chemical. Liquid Methanol may be synthesized from carbon monoxide gas and hydrogen gas under certain conditions of temperature and pressure. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

11. Elemental boron is produced in one industrial process by heating diboron trioxide gas with magnesium metal, also producing solid magnesium oxide. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

12. Calcium metal is moderately reactive. If pieces of calcium are added to water, the metal begins to bubble as hydrogen gas is formed. The water begins to turn cloudy as aqueous calcium hydroxide begins to form and the beaker becomes warm. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

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13. Hydrogen sulfide gas is responsible for the odor of rotten eggs. Hydrogen sulfide gas burns in air, producing sulfur dioxide gas and water vapor. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

14. Acetylene gas is often used by plumbers, welders, and glass blowers because it burns in oxygen with an intensely hot flame. The products of the combustion of acetylene are carbon dioxide gas and water vapor. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

15. If solid iron (III) oxide is heated strongly in a stream of carbon monoxide gas, it produces elemental iron and carbon dioxide gas. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
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16. Carbon tetrachloride may be prepared by the reaction of natural gas, methane, and chlorine gas in the presence of uv light. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

17. Ammonium nitrate is used as a “high-nitrogen” fertilizer, despite the fact that it is quite explosive if not handled carefully. Ammonium nitrate can be synthesized by the reaction of ammonia gas and nitric acid. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

18. The principal natural ore of lead is galena, which is primarily lead (II) sulfide. Lead (II) sulfide can be converted to lead (II) oxide and sulfur dioxide gas by heating strongly in air (oxygen gas). Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
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19. At high temperature xenon gas will combine with fluorine gas to produce solid xenon tetrafluoride. Write the word equation and the skeleton (unbalanced) chemical equation for this process.

Word Equation	
Skeleton Equation	

20. Magnesium hydroxide has been used for many years as an antacid ("milk of magnesia") because it reacts with the hydrochloric acid in the stomach, producing aqueous magnesium chloride and liquid water.

Word Equation	
Skeleton Equation	