

AP CHEMISTRY

TOPIC 1: CHEMICAL FOUNDATIONS, PART IIIc

Day 7:

Chemical Equations

Homework problems:

- 1) a) What scientific principle or law is used in the process of balancing chemical equations?

Conservation of Mass: Matter cannot be created or destroyed...

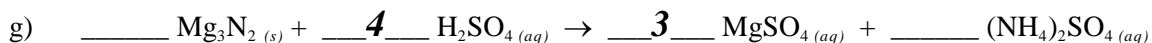
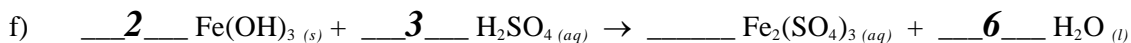
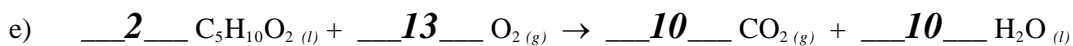
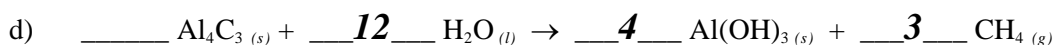
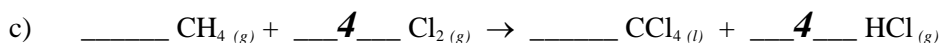
- b) In balancing equations, why shouldn't subscripts in chemical formulas be changed? Explain

Changing the subscripts (while balancing the equation) changes the properties of the compound and affects how (and IF) the reaction will occur. Changing the subscript changes the compound.

- c) What are the symbols used to represent gases, liquids, solids, and aqueous equations?

Gases (g), Liquids (l), solids (s), and aqueous (aq).

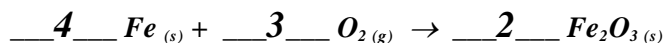
- 2) Balance the following equations:



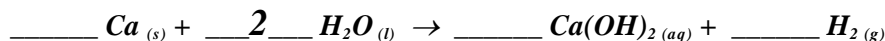
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3) Write a balanced chemical equation that describes each of the following:

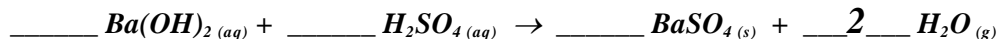
a) Iron metal reacts with oxygen to form rust, iron(III) oxide.



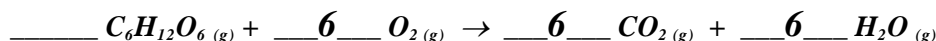
b) Calcium metal reacts with water to produce aqueous calcium hydroxide and hydrogen gas.



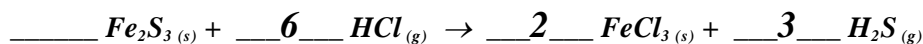
c) Aqueous barium hydroxide reacts with aqueous sulfuric acid to produce solid barium sulfate and water.



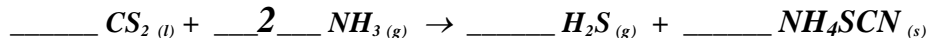
d) Glucose (C₆H₁₂O₆) reacts with oxygen gas to produce carbon dioxide and water vapor.



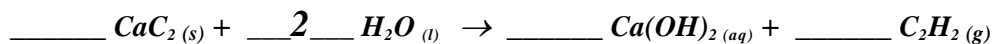
e) Solid iron(III) sulfide reacts with gaseous hydrogen chloride to form solid iron(III) chloride and hydrogen sulfide gas.



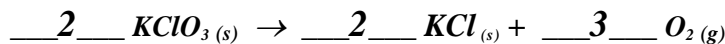
f) Carbon disulfide liquid reacts with ammonia gas (NH₃) to produce hydrogen sulfide gas and solid ammonium thiocyanate (NH₄SCN).



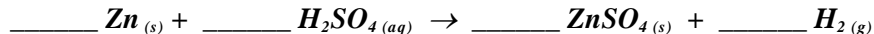
g) Solid calcium carbide (CaC₂) reacts with water to form an aqueous solution of calcium hydroxide and acetylene gas (C₂H₂).



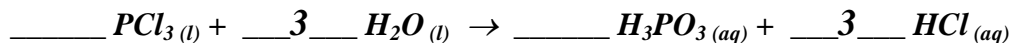
h) When solid potassium chlorate is heated, it decomposes to form solid potassium chloride and oxygen gas.



i) Solid zinc metal reacts with sulfuric acid to form hydrogen gas and an aqueous solution of zinc sulfate.



j) When liquid phosphorus trichloride is added to water, it reacts to form aqueous phosphorous acid (remember rules from last week on naming acids) and aqueous hydrochloric acid.



k) When hydrogen sulfide gas is passed over solid hot iron(III) hydroxide, the resultant reaction produces solid iron(III) sulfide and gaseous water.

