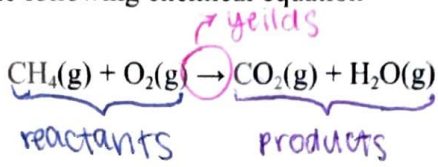
Chemical Reactions Worksheet

Combustion Reaction- hydrocarbon and oxygen react to form carbon dioxide and water.
Oxidation-Reduction Reaction (REDOX)- electrons are transferred from one substance to another

1. Identify each part of the following chemical equation



2. Identify the abbreviations indicating the states of the reactants and products in chemical equations

(g) gas
(s) solid → percipitate
(l) liquid
(aq) aqueous → soluble

3. Which changes involve a chemical reaction?

~~a.~~ Ice melting upon warming phase change
~~b.~~ An electric current passing through water, resulting in the formation of hydrogen and oxygen gas that appears as bubbles rising in the water boiling water
c. Iron rusting oxidation – water + air + metal
~~d.~~ Bubbles forming when a soda can is opened release of pressure

4. What are the clues that a chemical reaction has occurred?

* 1) Color change
* 2) Percipitate formation
3) emission of light
* 4) formation of gas/odor
* 5) change of temperature/energy (exo/endo)

5. In photosynthesis, plants make the sugar glucose, $C_6H_{12}O_6$, from carbon dioxide and water. The equation for the reaction is:

reactants products
6 - C - 6
18 - O - 8
12 - H - 12

$$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + xO_2$$

In order for this equation to be balanced, the coefficient x must be

a) 3 b) 6 c) 9 d) 12

6. Write a balanced chemical equation for the reaction between solid silicon dioxide and solid carbon to produce solid silicon monocarbide and carbon monoxide gas.

1 - Si - 1
2 - O - 1 (2) 2
3 (3) 1 - C - 2 (2) 3

$1\,SiO_{2(s)} + 3\,C_{(s)} \rightarrow 1\,SiC_{(s)} + 2\,CO_{(g)}$

reactants → products

7. Outline each type of chemical reaction and give a skeletal example of each:

Single Replacement $A + BC \rightarrow B + AC$

Double Replacement $AB + CD \rightarrow AD + CB$

Synthesis $A + B \rightarrow AB$

Decomposition $AB \rightarrow A + B$

8. Balance the chemical equation.

2 = (2) 1 - Fe - 1 (2) = 2
6 = (6) 3 = (3) 1 - H - 2 (3) = 6
6 = (6) 3 = (3) 1 - Cl - 3 (2) = 6

$$Fe(s) + HCl(aq) \rightarrow FeCl_3(aq) + H_2(g)$$

$$2Fe_{(s)} + 6HCl \rightarrow 2FeCl_{3(aq)} + 3H_{2(g)}$$

9. Is each compound soluble or insoluble?

AgBr — Silver Bromide — not soluble

$CaCl_2$ — Calcium Chloride — soluble

$Pb(NO_3)_2$ — Lead(II) Nitrate — soluble

$PbSO_4$ — Lead (II) Sulfate — not soluble