

# Oct 22, 2019

Answers pg 232 #1, 3-5a

## Synthesis/Decomposition Reactions

Test Monday on Chp 6!!

*incomplete* Warm-Up

1. Given the following chemical equation finish the reaction if not enough oxygen is present to complete the reaction. Also balance the equation.



## Pg 232 #1, 3-5a Answers

1. Combustion is a chemical reaction in which a substance reacts rapidly with oxygen. This reaction produces oxides and releases heat and energy.

3. complete combustion :

propane + oxygen  $\longrightarrow$  carbon dioxide + water vapour

incomplete combustion :

propane + oxygen  $\longrightarrow$  carbon monoxide + carbon + carbon dioxide + water vapour

4.  $C_3H_8 + O_2 \longrightarrow CO_2 + H_2O$

$C_3H_8 + O_2 \longrightarrow CO + C + CO_2 + H_2O$

5. a) complete combustion occurs where there is enough or an excess of oxygen gas and produces carbon dioxide and water vapour only. Incomplete combustion occurs when not enough oxygen is present and the products are carbon, carbon monoxide, carbon dioxide and water vapor.

## Types of Chemical Reactions

### II. Synthesis (Combination) Reactions

The reactions of smaller atoms/molecules into larger molecules (putting things together).



Element + Element  $\Rightarrow$  Compound

Ex. hydrogen + oxygen  $\Rightarrow$  water

OR



Compound + Compound  $\Rightarrow$  larger compound.

Ex.  $\text{HCl} + \text{NH}_3 \Rightarrow \text{NH}_4\text{Cl}$

## Types of Chemical Reactions

### III. Decomposition Reactions (Breaking Down)

- A single compound broken down into two or more simpler products.
- Will always have only ONE reactant!!!



Ex. nitrogen triiodide  $\Rightarrow$  nitrogen + iodine



Example:

A) Look at each of the following skeletal equations. Classify each of the following reactions as either a synthesis (S) or a decomposition reaction (D).

B) For each word equation write a skeletal equation.

C) Balance each equation.

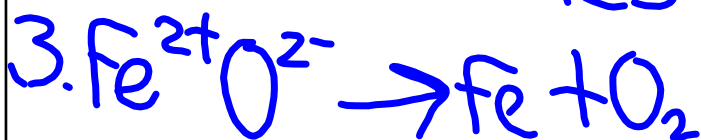
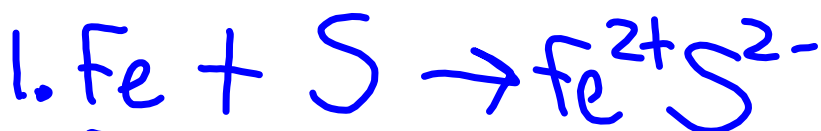
S 1. iron and sulphur creates iron(II) sulphide

D 2.  $2 \text{H}_2\text{O} \Rightarrow 2 \text{H}_2 + \text{O}_2$

D 3. iron(III) oxide decomposes into iron and oxygen

S 4.  $\text{Pb} + \text{O}_2 \Rightarrow \text{PbO}_2$

D 5.  $\text{Na}_2\text{CO}_3 \Rightarrow \text{Na}_2\text{O} + \text{CO}_2$



**Homework**  
**p. 235 #1-4**