



# TYPES OF REACTIONS

Categorizing Reactions into Different Types

# Types of Reactions

- 5 main categories
- Helps us predict things about the reactions
  - Know the reactants? You can predict the products
  - Know the products? You can predict the reactants

# Synthesis Reactions

*Two things combining into one*

## Example:

- $A + B \rightarrow C$
- $C + CO_2 \rightarrow CO_3$

## What to look for:

- **Two Reactants**
- **One Product**

# Decomposition Reactions

*One thing falling apart into two*

## Example:

- $XY \rightarrow X + Y$
- $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

## What to look for:

- One Reactant
- Two Products

***The opposite of synthesis reactions***

# Combustion Reactions

## *Burning*

### Example:

- **Hydrocarbon + O<sub>2</sub> → CO<sub>2</sub> + H<sub>2</sub>O**
- **CH<sub>4</sub> + 2O<sub>2</sub> → CO<sub>2</sub> + 2H<sub>2</sub>O**

### What to look for:

- Reactants = Hydrocarbon and O<sub>2</sub>
- Products = CO<sub>2</sub> and H<sub>2</sub>O

***ALWAYS MAKE CO<sub>2</sub> and H<sub>2</sub>O***

# Single Replacement Reactions

## Example:

- $A + BC \rightarrow AC + B$
- $Al + Pb(NO_3)_2 \rightarrow Al(NO_3)_2 + Pb$

## What to look for:

- Reactants = 1 element and 1 compound
- Products = 1 element and 1 compound,  
but different ones

***If element is a cation, replace it with the other cation.  
If it is an anion, replace it with the other anion***

# Double Replacement Reactions

## Example:

- $AB + CD \rightarrow AD + CB$
- $AgNO_3 + KCl \rightarrow AgCl + KNO_3$

## What to look for:

- Reactants = 2 Compounds
- Products = 2 Compounds but different ones

***Switch everything!***

# Worksheet

- Use your notes from today and your flow chart to help you
- What you don't finish is HW
- Read instructions and how it will be graded.
- If I have to tell you to work, you are not staying on task! If I look and you aren't working, you are not staying on task!
- **CLEAN UP WHEN FINISHED**