

# Chemical Reactions



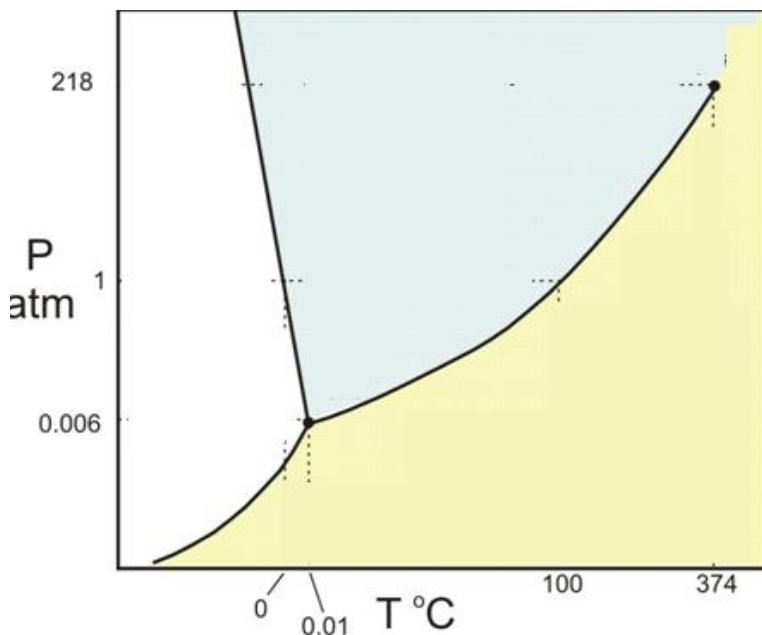
**Name** \_\_\_\_\_

**Test Date** \_\_\_\_\_

### Vocabulary to know

Terms	Definition
reactants	
products	
coefficient	
aqueous	
synthesis	
decomposition	
single replacement	
double replacement	
combustion	

### Phase Diagrams: \_\_\_\_\_



Label the following on the graph

- |                   |                         |                         |
|-------------------|-------------------------|-------------------------|
| 1) Solid          | 2) Liquid               | 7) Normal Boiling Point |
| 3) Gas            | 4) Triple point         |                         |
| 5) Critical point | 6) Normal Melting Point |                         |

Review: Indicators of a chemical change:

- 1)
- 2)
- 3)
- 4)

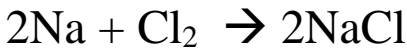
Endothermic: \_\_\_\_\_

Exothermic: \_\_\_\_\_

## Balancing Chemical Reactions

Definition:

Label this reaction:



\*Must KNOWS for chemical reactions:

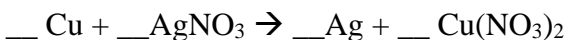
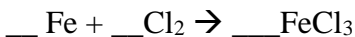
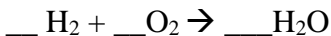
\*What do you use to balance chemical equations?

Why do we balance chemical equations?

\_\_\_\_\_

Definition of this law:

### **BALANCING EXAMPLES!**



**Important Balancing Notes:** You CANNOT \_\_\_\_\_  
\_\_\_\_\_, but you CAN \_\_\_\_\_  
\_\_\_\_\_ by placing it at the  
\_\_\_\_\_ of an \_\_\_\_\_ or \_\_\_\_\_.

**5 types of Chemical Reactions:**

- |    |    |
|----|----|
| 1) | 4) |
| 2) | 5) |
| 3) |    |

**Synthesis:** \_\_\_\_\_  
\_\_\_\_\_

Key ways to determine a synthesis reaction:

Example:

Types of Synthesis Reactions using the reference packet

- a)
  
  
- b)
  
  
- c)

**Decomposition:** \_\_\_\_\_  
\_\_\_\_\_

Key ways to determine a decomposition reaction:

Example:

## Types of Decomposition Reactions using the reference packet

a)

b)

d)

e)

**Try it:** Predict the Products, Balance and Classify

Reactants	Products	Classify (Type)
Na + S →		
Zn + O <sub>2</sub> →		
Ca(OH) <sub>2</sub> →		
CaCO <sub>3</sub> →		
Mg + O <sub>2</sub> →		

**Single Replacement:** \_\_\_\_\_

\_\_\_\_\_

\*When you complete a single replacement reaction you must always use the \_\_\_\_\_.

The \_\_\_\_\_ an element is on the activity series the more \_\_\_\_\_ the element is.

How do you know a reaction (rxn) occurs?

Example:

**Try It:** Always remember to BALANCE!!!!

<b>Reactants</b>	<b>Products</b>	<b>Rxn Occurs (yes or no?)</b>	<b>Why or why not?</b>
$\text{LiCl} + \text{Br}_2 \rightarrow$			
$\text{Mn} + \text{HI} \rightarrow$			
$\text{AgNO}_3 + \text{Li} \rightarrow$			
$\text{KNO}_3 + \text{Zn} \rightarrow$			
$\text{Na} + \text{Ca}_3(\text{PO}_4)_2 \rightarrow$			
$\text{Ag} + \text{Cu}_3(\text{PO}_4)_2 \rightarrow$			
$\text{Al}(\text{NO}_3)_3 + \text{Mg} \rightarrow$			

There are two activity series:

- 1)
- 2)

**Double Replacement** \_\_\_\_\_

Example:

With double replacement reactions you must determine if the reaction is \_\_\_\_\_ or \_\_\_\_\_ by using the \_\_\_\_\_ rules.

**Try It! Remember to Balance! Be sure to include states of matter.**

Reactants	Products
$\text{NaCl (aq)} + \text{Ca(NO}_3)_2 \text{ (aq)} \rightarrow$	
$\text{Li}_3\text{PO}_4 \text{ (aq)} + \text{BaF}_2 \text{ (aq)} \rightarrow$	
$\text{LiOH (aq)} + \text{H}_2\text{SO}_4 \text{ (aq)} \rightarrow$	

**Combustion:** \_\_\_\_\_

The products of a combustion reaction are always \_\_\_\_\_ ( )  
and \_\_\_\_\_ ( )

Example:

**Try It! Remember to Balance!**

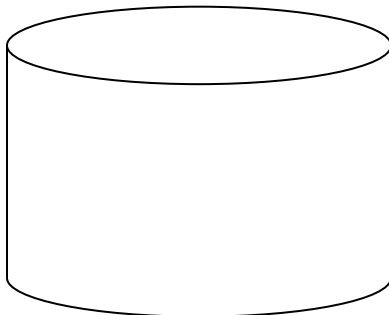
Reactants	Products
$\text{CH}_4 + \text{O}_2 \rightarrow$	
$\text{C}_2\text{H}_8 + \text{O}_2 \rightarrow$	
$\text{C}_3\text{H}_5 + \text{O}_2 \rightarrow$	

**Complete and Net Ionic Equations and Specator Ions**

Separate only the \_\_\_\_\_ compounds

Ions in water picture:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Example:

\_\_\_\_\_

**Complete Ionic:**

**Net Ionic:**

**Spectator Ions:**

Try your own:

**Complete Ionic:**

**Net Ionic:**

**Spectator Ions**

***Writing Chemical Reactions from Words:***

Directions: Write the following reactions using the correct nomenclature and also IDENTIFY & BALANCE these equations!

- 1) Solid sodium and liquid water react to form aqueous sodium hydroxide and hydrogen gas

Type: \_\_\_\_\_

- 2) Nitric acid and calcium hydroxide react (PREDICT PROD\*)

Type: \_\_\_\_\_

- 3)  $C_7H_{14}$  and oxygen react \*

Type: \_\_\_\_\_

- 4) Nitrogen gas and hydrogen gas react to form ammonia gas

Type: \_\_\_\_\_

- 5) Potassium iodide and lead (II) nitrate react \*

Type: \_\_\_\_\_