

Date _____ Name _____
 Section _____ Team _____
 Instructor _____

Pre-Lab Study Questions

- Why are burning candles and rusting nails examples of chemical change?
- What is included in a chemical equation?
- How does a combination reaction differ from a decomposition reaction?
- Balance each of the following reactions, and identify the type of reaction:

Unbalanced Equation	Type of Reaction
a. $\text{Al}(s) + \text{Fe}_2\text{O}_3(s) \xrightarrow{\Delta} \text{Al}_2\text{O}_3 + \text{Fe}(l)$	
b. $\text{KClO}_3(s) \xrightarrow{\Delta} \text{KCl}(s) + \text{O}_2(g)$	
c. $\text{Li}(s) + \text{Cl}_2(g) \xrightarrow{\Delta} \text{LiCl}(s)$	
d. $\text{C}_2\text{H}_4(g) + \text{O}_2(g) \xrightarrow{\Delta} \text{CO}_2(g) + \text{H}_2\text{O}(g)$	
e. $\text{CrCl}_3(aq) + \text{H}_2\text{S}(g) \longrightarrow \text{Cr}_2\text{S}_3(s) + \text{HCl}(aq)$	

- Complete and balance each of the following reactions:

Reactants	Type of Reaction
a. $\text{K}(s) + \text{N}_2(g) \longrightarrow$	Combination
b. $\text{C}_5\text{H}_{12}(g) + \text{O}_2(g) \xrightarrow{\Delta}$	Combustion
c. $\text{Al}(s) + \text{CuSO}_4(aq) \longrightarrow$	Single Replacement
d. $\text{CoCl}_3(aq) + \text{AgNO}_3(aq) \longrightarrow$	Double Replacement
e. $\text{MgCO}_3(s) \xrightarrow{\Delta}$	Decomposition

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REPORT SHEET

Chemical Reactions and Equations

A. Magnesium and Oxygen

1. Initial appearance of Mg _____

2. Evidence of chemical reaction _____

3. Balance: _____ Mg(s) + _____ O₂(g) → _____ MgO(s)

4. Type of chemical reaction: _____

B. Zinc and Copper(II) Sulfate

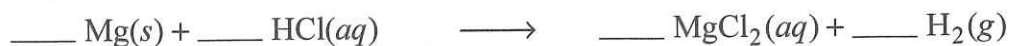
Time	CuSO ₄ (aq) Appearance	Zn(s) Appearance	Evidence of a Chemical Reaction
1. initial			
2. after 30 min			

3. _____ Zn(s) + _____ CuSO₄(aq) → _____ Cu(s) + _____ ZnSO₄(aq)

4. Type of chemical reaction: _____

C. Reactions of Metals and HCl

Metal	1. Appearance of Metals	2. Evidence of a Chemical Reaction
Zn(s)		
Cu(s)		
Mg(s)		



4. Type of chemical reaction:

Zn _____

Cu _____

Mg _____

D. Reactions of Ionic Compounds

D1 Reaction of CaCl_2 and Na_3PO_4

Reactants	1. Appearance of Solutions	2. Evidence of a Chemical Reaction
$\text{CaCl}_2(aq)$		
$\text{Na}_3\text{PO}_4(aq)$		



4. Type of reaction: _____

D2 Reaction of FeCl_3 and KSCN

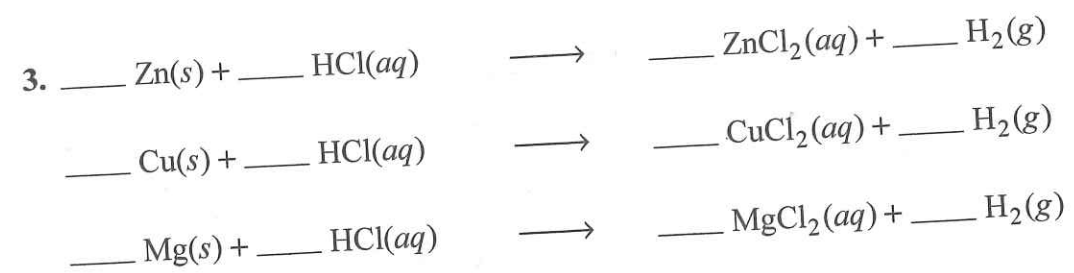
Reactants	1. Appearance of Solutions	2. Evidence of a Chemical Reaction
$\text{FeCl}_3(aq)$		
$\text{KSCN}(aq)$		



4. Type of reaction: _____

E. Sodium Carbonate and HCl

Reactants	1. Appearance of Reactants	2. Evidence of a Chemical Reaction
$\text{HCl}(aq)$		
$\text{Na}_2\text{CO}_3(s)$		



4. Type of chemical reaction:

Zn _____

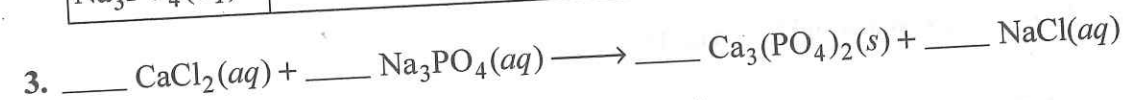
Cu _____

Mg _____

D. Reactions of Ionic Compounds

D1 Reaction of CaCl_2 and Na_3PO_4

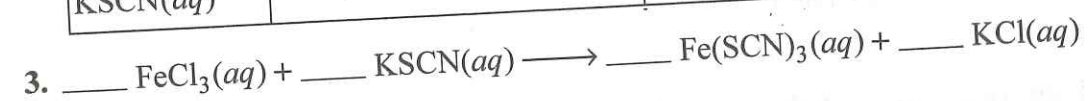
Reactants	1. Appearance of Solutions	2. Evidence of a Chemical Reaction
$\text{CaCl}_2(aq)$		
$\text{Na}_3\text{PO}_4(aq)$		



4. Type of reaction: _____

D2 Reaction of FeCl_3 and KSCN

Reactants	1. Appearance of Solutions	2. Evidence of a Chemical Reaction
$\text{FeCl}_3(aq)$		
$\text{KSCN}(aq)$		



4. Type of reaction: _____

E. Sodium Carbonate and HCl

Reactants	1. Appearance of Reactants	2. Evidence of a Chemical Reaction
$\text{HCl}(aq)$		
$\text{Na}_2\text{CO}_3(s)$		

3. Observation of burning match or splint _____

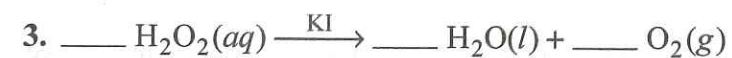
What caused the change in the burning match or splint?



5. Type of reaction: _____

F. Hydrogen Peroxide

Reactants	1. Appearance of Reactants	2. Evidence of a Chemical Reaction
$\text{H}_2\text{O}_2(aq)$		



4. Type of chemical reaction: _____

Questions and Problems

Q1 What evidence of a chemical reaction might you see in the following cases? Refer to Table 1.

a. dropping an Alka-Seltzer tablet into a glass of water

b. bleaching a stain

c. burning a match

d. rusting of an iron nail

Q2 Balance the following equations:

