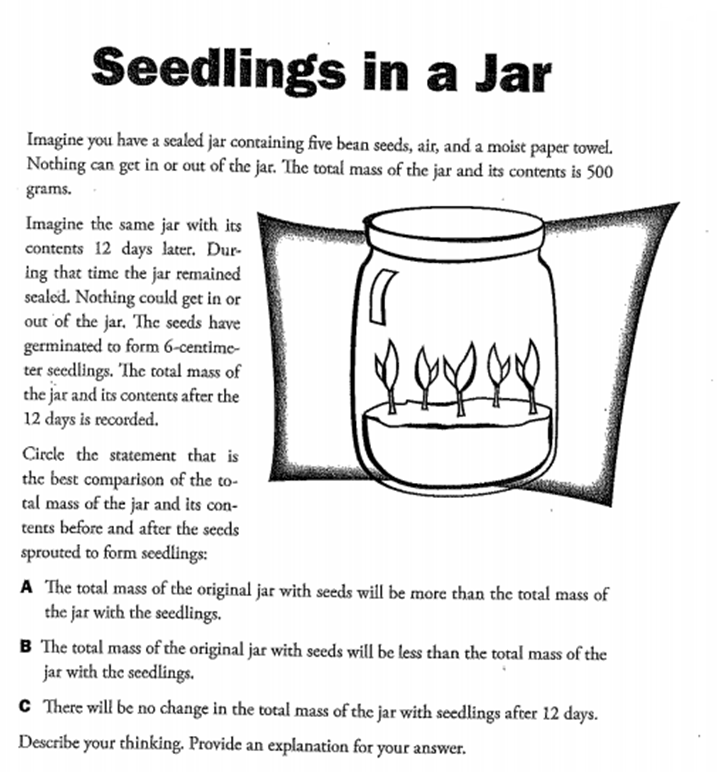
Unit 7: Chemical Reactions Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_

|  |
| --- |
| **Learning Targets** |
| 1. I CAN state and describe the Law of Conservation of Matter as it pertains to chemical reactions |
| 1. I CAN explain the significance of the components of a chemical reaction (reactants, products, arrow, states of matter, etc). |
| 1. I CAN write a chemical equation from a description AND describe a chemical reaction from the equation *\*This is review from Unit 5: Naming and Bonding* |
| 1. I CAN balance a chemical equation |
| 1. I CAN identify and describe the six types of chemical reactions based on their reactants and products |
| 1. Given a chemical reaction, I CAN classify the type based on the reactants and products |
| 1. I CAN describe the processes of oxidation and reduction; I CAN identify which elements are oxidized and reduced. |
| 1. Given a chemical reaction, I CAN classify the oxidizing agent and the reducing agent. |
| 1. I CAN describe and draw the interactions of compounds molecules in a chemical reaction *\*Includes dissolve, dissociate, ionize, and precipitate* |
| 1. I CAN define solubility and determine a compounds solubility in water using “like dissolves like” |
| 1. I CAN use a given chart to determine if a specific compound is soluble or insoluble in water |
| 1. I CAN define precipitate and describe how a precipitate forms |
| 1. I CAN determine whether a reaction goes to completion using a reactivity and solubility chart |
| 1. I CAN predict the products of a chemical reaction |
| 1. I CAN write and balance an entire chemical equation, including states of matter, when given the reactant(s) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Chemistry Important Dates! | | | | | | |
| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| March 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |



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**Counting Atoms Practice**

How many of each type of atom are in the following?

1. 4 MgCl2

Mg\_\_\_\_\_ Cl\_\_\_\_\_

1. Be(NO3)2

Be\_\_\_\_\_ O\_\_\_\_\_ N\_\_\_\_\_\_

1. 4 Be(NO3)2

Be\_\_\_\_\_ O\_\_\_\_\_ N\_\_\_\_\_\_

1. MgCl2 + Li2CO3

Mg\_\_\_\_\_ Cl\_\_\_\_\_ Li\_\_\_\_ C\_\_\_\_\_ O\_\_\_\_

1. C6H12 O6 + 9 O2

C\_\_\_ O\_\_\_\_ H\_\_\_\_\_\_

1. 6 CO2 + 6 H2O

C\_\_\_ O\_\_\_\_ H\_\_\_\_\_\_

1. Pb + FeSO4

Pb\_\_\_ O\_\_\_\_ S\_\_\_\_\_\_ Fe\_\_\_\_\_\_

1. CaO + CO2

C\_\_\_ O\_\_\_\_ Ca\_\_\_\_\_\_

1. P4 + 3 O2

P\_\_\_\_ O\_\_\_\_\_

1. 2 P2O3

P\_\_\_\_ O\_\_\_\_\_

1. 2 RbNO3 + BeF2

Rb\_\_\_\_ O\_\_\_\_\_ N\_\_\_\_\_\_ Be\_\_\_\_\_\_ F\_\_\_\_\_\_

1. Be(NO3)2 + 2 RbF

Rb\_\_\_\_ O\_\_\_\_\_ N\_\_\_\_\_\_ Be\_\_\_\_\_\_ F\_\_\_\_\_\_

1. 2 AgNO3 + Cu

Ag\_\_\_\_ O\_\_\_\_\_ N\_\_\_\_\_\_ Cu\_\_\_\_\_\_

1. Cu(NO3)2 + 2 Ag

Ag\_\_\_\_ O\_\_\_\_\_ N\_\_\_\_\_\_ Cu\_\_\_\_\_\_

1. C3H6O + 4 O2

C\_\_\_\_ O\_\_\_\_\_ H\_\_\_\_\_\_

1. Fe(C5H5)2

Fe\_\_\_\_ C\_\_\_\_\_ H\_\_\_\_\_\_

**Balancing Equations Practice** Use the methods from the video to balance the following:

**Notes on Balancing Chemical Reactions Draw ALL of the examples!**

1. \_\_\_\_\_N2 + \_\_\_\_\_H2 🡪 \_\_\_\_\_\_NH3

2. \_\_\_\_\_**C4H8 + \_\_\_\_\_O2 🡪 \_\_\_\_\_CO2 + \_\_\_\_\_H2O**

**3. \_\_\_\_\_\_KNO3 🡪 \_\_\_\_\_KNO2 + \_\_\_\_\_\_O2**

**4. \_\_\_\_\_AgNO3 + \_\_\_\_NaCl 🡪 \_\_\_\_NaNO3 + \_\_\_\_AgCl**

**5. \_\_\_\_\_Mg + \_\_\_\_\_O2 🡪 \_\_\_\_\_\_MgO**

**Chembalancer Webquest**    
Go to Google and search for “Classic Chembalancer”. Click on the first link. Use the simulation to balance each equation. Notice that changing the coefficient in front changes the number of molecules. You must have the same number of atoms on both sides of the equation.   
  
1A) \_\_\_\_ Fe + \_\_\_\_ S 🡪 \_\_\_\_\_\_ FeS 1B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
1C) What is the name for FeS? 1D) What does Iron mean in Latin?   
  
  
2A) \_\_\_\_\_ H2 + \_\_\_\_\_ Cl2 🡪 \_\_\_\_\_ HCl 2B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
2C) What is the name for HCl? 2D) Where is this molecule found?   
  
  
3A) \_\_\_\_ Mg + \_\_\_\_ O2 🡪 \_\_\_\_\_\_ MgO 3B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
3C) What is the name for MgO? 3D) When Mg burns, what does it give off?  
  
  
4A) \_\_\_\_ O2 + \_\_\_\_ H2 🡪 \_\_\_\_\_\_ H2O 4B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
4C) What types of bonds does H2 have? 4D) What did this reaction do?  
  
  
5A) \_\_\_\_ HgO 🡪 \_\_\_\_\_\_ Hg + \_\_\_\_\_O2 5B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
5C) What is the name for HgO? 5D) What are some unique things about Hg?  
  
  
6A) \_\_\_Ca + \_\_\_ H2O 🡪 \_\_\_ Ca(OH)2 + \_\_\_H2 6B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
6C) What is the name for Ca(OH)2? 6D) What gas is produced in this reaction?  
  
  
7A) \_\_\_CH4 + \_\_\_ O2 🡪 \_\_\_ CO2 + \_\_\_H2O 7B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
7C) What is the name for CH4? 7D) Where is CH4 found?  
  
  
8A) \_\_\_Na2O2 + \_\_\_ H2SO4 🡪 \_\_\_ Na2SO4 + \_\_\_H2O2 8B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_  
8C) What is the name for H2SO4? 8D) What is H2O2 and what is it used for?   
  
  
9A) \_\_\_\_\_N2 + \_\_\_\_\_ H2 🡪 \_\_\_ NH3 9B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
9C) What is the name for NH3? 9D) What is ammonia used for?   
  
  
10A) \_\_\_Al + \_\_\_ O2 🡪 \_\_\_ Al2O3  10B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
10C) What is the name for Al2O3 10D) When Aluminum oxidizes, it’s called?  
  
  
11A) \_\_\_KMnO4 🡪 \_\_\_ K2O + \_\_\_ MnO + \_\_\_O2 11B) This reaction would be classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_  
11C) What is the name for KMnO4? 11D) What does “Pyrolysis” mean?

**Balancing Equations Practice**

1) \_\_\_\_ AlBr3 + \_\_\_\_ K 🡪 \_\_\_\_ KBr + \_\_\_\_ Al

2) \_\_\_\_ FeO + \_\_\_\_ PdF2 🡪 \_\_\_\_ FeF2 + \_\_\_\_ PdO

3) \_\_\_\_ P4 + \_\_\_\_ Br2 🡪 \_\_\_\_ PBr3

4) \_\_\_\_ LiCl + \_\_\_\_ Br2 🡪 \_\_\_\_ LiBr + \_\_\_\_ Cl2

5) \_\_\_\_ PbBr2 + \_\_\_\_ HCl 🡪 \_\_\_\_ HBr + \_\_\_\_ PbCl2

6) \_\_\_\_ CoBr3 + \_\_\_\_ CaSO4 🡪 \_\_\_\_ CaBr2 + \_\_\_\_ Co2(SO4)3

7) \_\_\_\_ Na3P + \_\_\_\_ CaF2 🡪 \_\_\_\_ NaF + \_\_\_\_ Ca3P2

8) \_\_\_\_ Mn + \_\_\_\_ HI 🡪 \_\_\_\_ H2 + \_\_\_\_ MnI3

9) \_\_\_\_ Li3PO4 + \_\_\_\_ NaBr 🡪 \_\_\_\_ Na3PO4 + \_\_\_\_ LiBr

10) \_\_\_\_ CaF2 + \_\_\_\_ Li2SO4 🡪 \_\_\_\_ CaSO4 + \_\_\_\_ LiF

11) \_\_\_\_ HBr + \_\_\_\_ Mg(OH)2 🡪 \_\_\_\_ MgBr2 + \_\_\_\_ H2O

12) \_\_\_\_ LiNO3 + \_\_\_\_ CaBr2 🡪 \_\_\_\_ Ca(NO3)2 + \_\_\_\_ LiBr

13) \_\_\_\_ AgNO3 + \_\_\_\_ Li 🡪 \_\_\_\_ LiNO3 + \_\_\_\_ Ag

**Types of Reactions Practice** Balance and identify the types of reactions for each of the following:

**Notes on Types of Chemical Reactions Draw ALL of the examples!**

**1. \_\_\_\_\_Ag + \_\_\_\_\_S ---> \_\_\_\_\_Ag2S**

**2. \_\_\_\_\_MgCO3 ---> \_\_\_\_\_MgO + \_\_\_\_\_CO2**

**3. \_\_\_\_\_Cl2 + \_\_\_\_\_KBr ---> \_\_\_\_\_KCl + \_\_\_\_\_Br2**

**4.** \_\_\_\_\_NaBr + \_\_\_\_\_Ca(OH)2 🡪 \_\_\_\_\_CaBr2 + \_\_\_\_\_NaOH

**5. \_\_\_\_\_**C5H12 + \_\_\_\_\_O2 → \_\_\_\_\_CO2 +\_\_\_\_\_ H2O

**Types of Chemical Reactions**

Directions:

* Balance the elements one at a time using coefficients. A coefficient is a whole number that appears in front of a formula in an equation. When no coefficient is written, it is assumed to be 1. It is best to begin with an element other than Hydrogen or Oxygen. These two elements often occur more than twice in an equation.
* Do NOT balance an equation by changing the subscripts in a chemical formula.
* Check each atom or polyatomic ion to be sure that the equation is balanced.
* Make sure that all the coefficients are in the lowest possible ratio.
* Find the commonalities in the set of reactions and label that set with the appropriate name.

Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Two or more substance react to form a single substance.

Fe + O2 🡪 FeO

P + O2 🡪 P4O10

N2O5 + H2O 🡪 HNO3

Al + O2 🡪 Al2O3  
 S8 + O2 🡪 SO3

Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A single compound is broken down into two or more products.

Ag2O 🡪 Ag + O2

NH4NO3 🡪 N2O+ H2O

H2O 🡪 H2 + O2

HgO 🡪 Hg + O2

Mg(ClO3)2 🡪 MgCl2 + O2

Types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Atoms of an element replace the atoms of a second element in a

compound.

Zn + H2SO4 🡪 ZnSO4 + H2

K + H2O 🡪 KOH + H2

Cl2 + NaBr 🡪 NaCl + Br2

Al + H2SO­4 🡪 Al2(SO4)3 + H2

Li + H2O 🡪 LiOH + H2

Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Involves an exchange of positive ions between two compounds.

NaOH + H2SO4 🡪 Na2SO4 + H­2O

KOH + H3PO4 🡪 K2PO4 + H2O

AgNO3 + KCl 🡪 KNO3 + H2O

SrBr2 + (NH4)2CO3 🡪 SrCO3 + NH4Br

FeS + HCl 🡪 H2S + FeCl2

Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Oxygen reacts with a hydrocarbon producing carbon dioxide and

water (and energy in the form of heat and light)

CH­4 + O2 🡪 CO2 + H2O

C6H6 + O2 🡪 CO2 + H2O

CH3OH + O2 🡪 CO2 + H2O

C6H12O6 + O2 🡪 CO2 + H2O

C4H10 + O2 🡪 CO2 + H2O

**Types of Reactions Practice**

**Section 1: Identify the type of reaction**

For the following reactions, indicate whether the following are examples of synthesis, decomposition, combustion, single displacement, double displacement, or acid base.

1) Na3PO4 + 3 KOH 🡪 3 NaOH + K3PO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) MgCl2 + Li2CO3 🡪 MgCO3 + 2 LiCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) C6H12 + 9 O2 🡪 6 CO2 + 6 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Pb + FeSO4 🡪 PbSO4 + Fe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) CaCO3 🡪 CaO + CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) P4 + 3 O2 🡪 2 P2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) 2 RbNO3 + BeF2 🡪 Be(NO3)2 + 2 RbF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) O3 🡪 O. + O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) C3H6O + 4 O2 🡪 3 CO2 + 3 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) 2 C5H5 + Fe 🡪 Fe(C5H5)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section 2: Practicing equation balancing**

Balance these equations, Then Classify!

1) \_\_\_ C6H6 + \_\_\_ O2 🡪 \_\_\_ H2O + \_\_\_ CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) \_\_ NaI + \_\_ Pb(SO4)2 🡪 \_\_ PbI4 + \_\_ Na2SO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) \_\_ NH3 + \_\_ O2 🡪\_\_ NO + \_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) \_\_ Fe(OH)3 🡪 \_\_ Fe2O3 + \_\_ H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) \_\_ HNO3 + \_\_ Mg(OH)2 🡪 \_\_H2O + \_\_ Mg(NO3)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) \_\_ H3PO4 + \_\_ NaBr 🡪 \_\_ HBr + \_\_ Na3PO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) \_\_ C + \_\_ H2 🡪 \_\_ C3H8 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) \_\_ CaO + \_\_ MnI4 🡪 \_\_ MnO2 + \_\_ CaI2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) \_\_ Fe2O3 + \_\_ H2O 🡪 \_\_ Fe(OH)3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) \_\_ C2H2 + \_\_ H2 🡪 \_\_ C2H6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11) \_\_ VF5 + \_\_ HI 🡪 \_\_ V2I10 + \_\_ HF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Translating Practice**

*Create an equation from these reaction sentences. Once you have written the reaction, balance it and classify it.*

1. Hydrogen reacts with oxygen to produce water.
2. Silicon chloride decomposes to silicon and chlorine.
3. Calcium combines with hydrochloric acid to produce calcium chloride and hydrogen gas.
4. Magnesium reacts with oxygen to produce magnesium oxide.
5. Iron combines with fluorine to produce iron (III) fluoride.
6. Nitrogen gas and hydrogen gas react to form ammonia gas.(NH3)
7. Barium reacts with sulfur to form barium sulfide.
8. Zinc metal reacts with hydrobromic acid to form zinc (II) bromide and hydrogen gas.
9. Gold (III) oxide decomposes into gold and oxygen.

**Oxidation and Reduction Practice**

**Notes on Redox Reactions Draw ALL of the examples!**

1. Determine the oxidation number of each atom in the following substances
   1. NaF Name of compound: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ox #: N F \_\_\_
   2. K2CO3 Name of compound: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ox #: K CO3 \_\_\_

c. Fe(NO3)2 Name of compound: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ox #: Fe NO3 ­\_\_\_

1. HCl Name of compound: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ox #: H Cl ­\_\_\_
2. For the following balanced redox reaction answer the following questions

Na(s) + MgNO3(aq) 🡪 Mg(s) + NaNO3(aq)

* 1. What is the oxidation number of Magnesium when in a bond?
  2. What is the element that is oxidized?
  3. What is the element that is reduced?
  4. What is the reducing agent?
  5. What part of the equation does not change its charge?

**Oxidation/Reduction Practice**

Give the oxidation number of each kind of atom or ion.

a. SO­42- b. Sn c. S2- d. Fe3+ e. Sn4+ f. NO31- g. NH4+

Determine the oxidation numbers of each element below. Use that information to identify what has been oxidized and reduced, and what is the oxidizing agent and reducing agent.

1. 2Sr + O2 🡪2SrO

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

2. 2Li + S 🡪Li2S

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

3. 2Fe + 3CuSO4 🡪 3Cu + Fe2(SO4)3

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

4. N2 + 3Mg 🡪 Mg3N2

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

5. 4Fe + 3O2 🡪 2Fe2O3

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

6. Cl2 + 2NaBr 🡪 2NaCl + Br2

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

7. 2F2 + Si 🡪 SiF4

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

8. Al(OH)3 + 3K 🡪 3KOH + Al

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

9. Mg + 2HCl 🡪 MgCl2 + H2

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

10. 2Na + 2HOH 🡪 2NaOH + H2

Oxidized: Reduced: Oxidizing Agent: Reducing Agent:

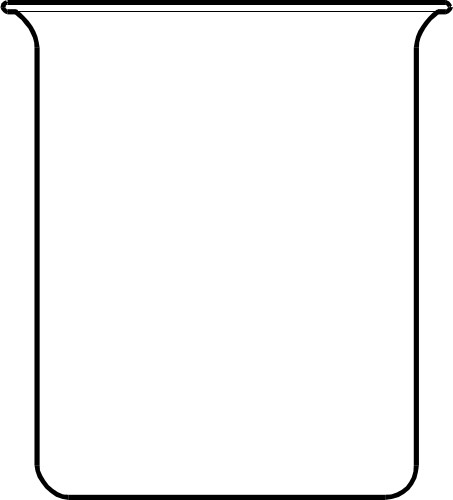
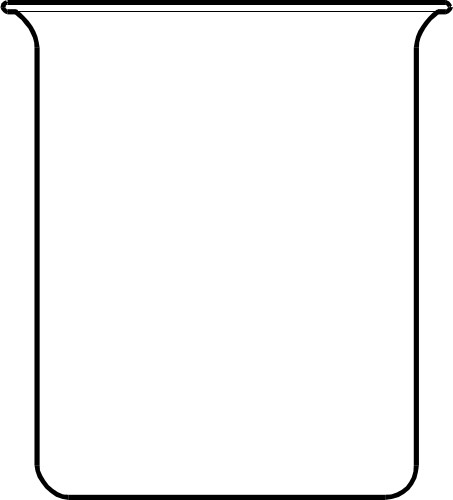
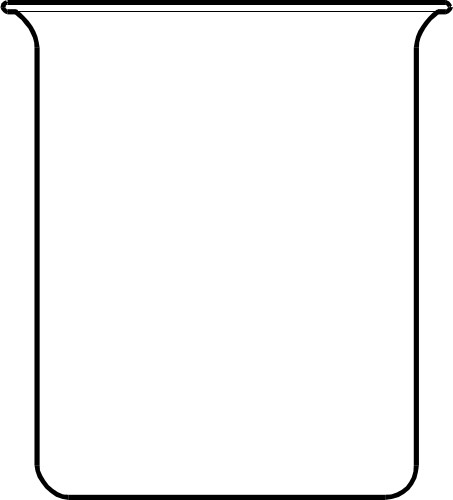
**Notes on Chemical Processes Draw ALL of the examples! Write ALL of the definitions and types of chemicals.**

**Chemical Processes Practice**

1. For the following reactions, underline the reactants and circle the products. *If the reaction is written in words, re-write it using chemical formulas*:
   1. In the reaction of sodium hydroxide and copper (II) sulfate, copper (II) hydroxide is precipitated and a solution of sodium sulfate is produced.
   2. Cu(OH)2 🡪 CuO + H2O
   3. Dinitrogen tetraoxide can be decomposed into two molecules of nitrogen dioxide.
   4. HCl + KOH 🡪 KCl + HOH
2. Write an equation for the reaction of aqueous sodium hydroxide with a solution of nitric acid to produce water and aqueous sodium nitrate. Then circle what chemical process that has done (has the substance has dissolved, dissociated, ionized, or precipitated?). Next, draw the solutions interacting with water in the beakers below.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **+** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **+** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

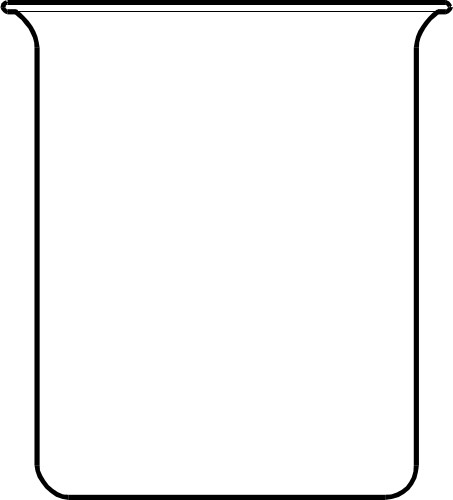
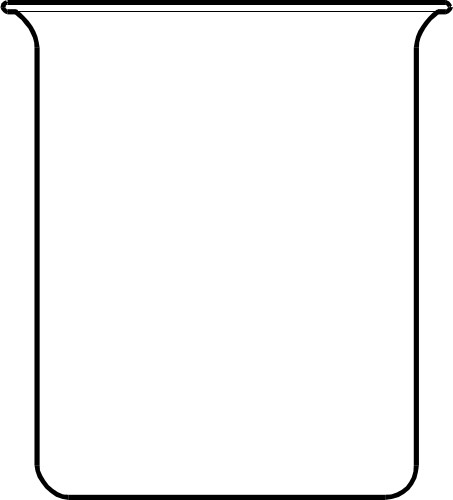
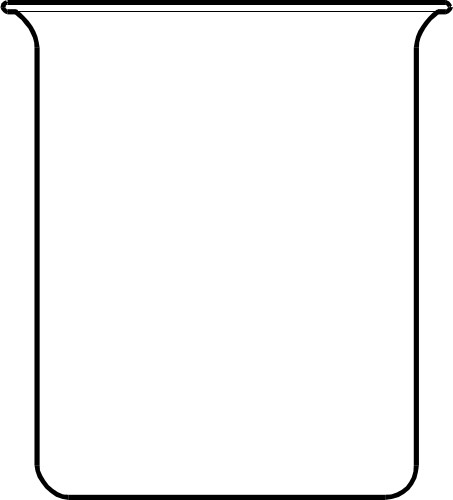
dissolve dissolve dissolve dissolve  
dissociate dissociate dissociate dissociate  
ionize ionize ionize ionize   
precipitate precipitate precipitate precipitate  
no interaction no interaction no interaction no interaction

1. Write an equation for the reaction of solid copper with a solution of nitric acid to produce aqueous copper (II) nitrate, nitrogen dioxide gas, and water. Then circle what chemical process that has done (has the substance has dissolved, dissociated, ionized, or precipitated?). Next, draw the solutions interacting with water in the beakers below.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **+** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_🡪 \_\_\_\_\_\_\_\_\_\_ **+** \_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_

dissolve dissolve dissolve dissolve dissolve  
dissociate dissociate dissociate dissociate dissociate  
ionize ionize ionize ionize ionize   
precipitate precipitate precipitate precipitate precipitate  
no interaction no interaction no interaction no interaction no interaction

**Notes on Predicting Products of Chemical Reactions**

**Predicting Products Practice**

Complete the reactions by writing the products. ***Remember: when you form an element, don’t forget about the 7 diatomic gases (Br2, I2, N2 Cl2, H2, O2, F2) and balance ionic formulas!***

Combustion Reactions:

CH4 + O2 🡪

C5H12 + O2 🡪

C6H6 + O2 🡪

C2H5OH + O2 🡪

C12H22O11 + O2 🡪

Double Replacement Reactions:

CaCL2 + Al2O3 🡪

LiCl + Pb(NO3)2 🡪

Na2SO4 + CaCl2 🡪

HCl + K2PO4 🡪

HBr + Ca(OH)2 🡪

Single Replacement Reactions:

AgCl + Mg 🡪

Ca + FeF3 🡪

HCl + Al 🡪

KBr + Li 🡪

Cl2 + Al2O3 🡪

Synthesis (addition) Reactions:

Na + Cl2 🡪

O2 + K 🡪

H2 + F2 🡪

Li + N2 🡪

Ca + Cl2 🡪

Identify the type of reaction and determine the products for the following reactions (Use reactivity and solubility charts!)

Decomposition Reactions:

MgO 🡪

AlCl3 🡪

H2O 🡪

CaS 🡪

NF3 🡪

* 1. Na + Cl2 🡪
  2. Na + CaF2 🡪
  3. AgF + CaCl2 🡪
  4. C2H4 + O2 🡪
  5. K2S 🡪
  6. O2 + Mg 🡪
  7. Mg + AlBr3 🡪
  8. C2H6O+ O2 🡪
  9. Li2SO4 + MgCl2 🡪
  10. HCl + Zn 🡪
  11. BaBr2 🡪
  12. Na2O 🡪
  13. O2 + C6H12 🡪
  14. S8 + Na🡪
  15. Na2SO4 + Pb(NO3)2🡪
  16. Al + SnCl2 🡪
  17. CaO + HNO3 🡪
  18. CuI2 🡪
  19. Na3N + Ca 🡪
  20. Mg + CuSO4 🡪

**Unit 7 Review:**

For each of the following reactions, determine what the products of each reaction will be. Then balance, then translate into words, then classify the type of reaction. Determine if it is a redox reaction.

1) \_\_\_\_ Ca + \_\_\_\_ HF 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) \_\_\_\_ Fe(NO3)2 + \_\_\_\_ K2S 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) \_\_\_\_ Na + \_\_\_\_ Cl2 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) \_\_\_\_ Cu(OH)2 + \_\_\_\_ H3P 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) \_\_\_\_\_\_ C3H8 + \_\_\_\_\_O2 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) \_\_\_\_ Al + \_\_\_\_ Ca(CO­3) 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) \_\_\_\_ Ba(OH)2 + \_\_\_\_ Hg2S 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) \_\_\_\_\_ C2H4 + \_\_\_\_\_O2 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) \_\_\_\_\_ H2S + \_\_\_\_\_ Ca(OH)2 🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) \_\_\_\_\_ Sr + \_\_\_\_\_ H2(SO4)🡪

Type of reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_