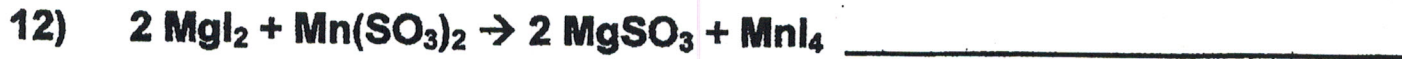
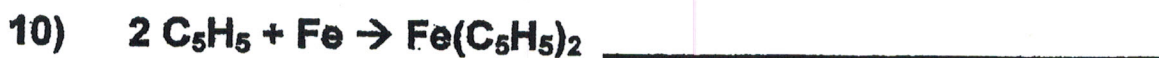
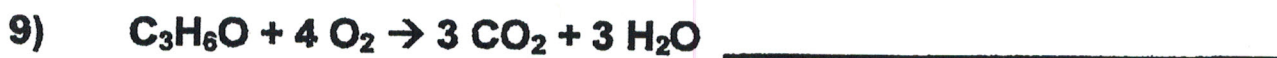
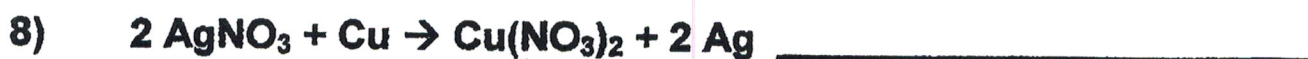
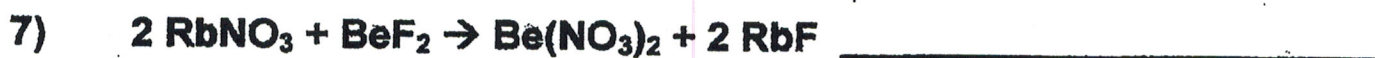
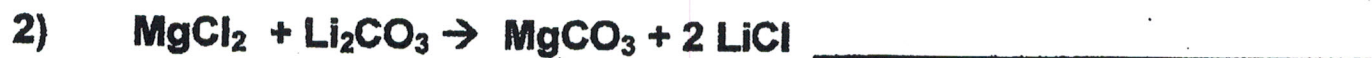
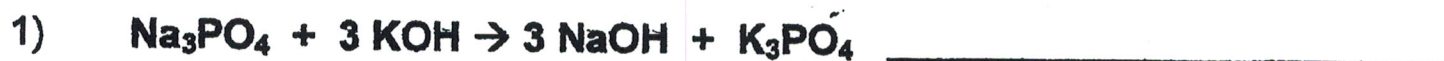


A Voyage through Equations

After working on this set of worksheets (there are three), you should be able to do the following:

Section 1: Identify the type of reaction

For the following reactions, indicate whether the following are examples of **synthesis**, **decomposition**, **single replacement (displacement)**, **double replacement (displacement)**, or **combustion**.



***SCIENCE 1206 Section 2:

For each of the following skeleton chemical equations:

a) **Identify the type of reaction.** Remember that the five identifiable types of reactions are **synthesis (composition)**, **decomposition**, **single displacement (replacement)**, **double displacement (replacement)**, and **hydrocarbon combustion**.

b) **Balance the equation.**

- 1) $\underline{\quad} \text{Na}_3\text{PO}_4(\text{aq}) + \underline{\quad} \text{KOH}(\text{aq}) \rightarrow \underline{\quad} \text{NaOH}(\text{aq}) + \underline{\quad} \text{K}_3\text{PO}_4(\text{aq})$
- 2) $\underline{\quad} \text{MgCl}_2(\text{aq}) + \underline{\quad} \text{Li}_2\text{CO}_3(\text{aq}) \rightarrow \underline{\quad} \text{MgCO}_3(\text{s}) + \underline{\quad} \text{LiCl}(\text{aq})$
- 3) $\underline{\quad} \text{C}_6\text{H}_{12}(\text{l}) + \underline{\quad} \text{O}_2(\text{g}) \rightarrow \underline{\quad} \text{CO}_2(\text{g}) + \underline{\quad} \text{H}_2\text{O}(\text{g})$
- 4) $\underline{\quad} \text{Pb}(\text{s}) + \underline{\quad} \text{FeSO}_4(\text{aq}) \rightarrow \underline{\quad} \text{PbSO}_4(\text{aq}) + \underline{\quad} \text{Fe}(\text{s})$
- 5) $\underline{\quad} \text{CaCO}_3(\text{s}) \rightarrow \underline{\quad} \text{CaO}(\text{s}) + \underline{\quad} \text{CO}_2(\text{g})$
- 6) $\underline{\quad} \text{P}_4(\text{s}) + \underline{\quad} \text{O}_2(\text{g}) \rightarrow \underline{\quad} \text{P}_2\text{O}_3(\text{s})$
- 7) $\underline{\quad} \text{RbNO}_3(\text{aq}) + \underline{\quad} \text{BeF}_2(\text{aq}) \rightarrow \underline{\quad} \text{Be}(\text{NO}_3)_2(\text{aq}) + \underline{\quad} \text{RbF}(\text{aq})$
- 8) $\underline{\quad} \text{AgNO}_3(\text{aq}) + \underline{\quad} \text{Cu}(\text{s}) \rightarrow \underline{\quad} \text{Cu}(\text{NO}_3)_2(\text{aq}) + \underline{\quad} \text{Ag}(\text{s})$
- 9) $\underline{\quad} \text{C}_3\text{H}_6\text{O}(\text{l}) + \underline{\quad} \text{O}_2(\text{g}) \rightarrow \underline{\quad} \text{CO}_2(\text{g}) + \underline{\quad} \text{H}_2\text{O}(\text{g})$
- 10) $\underline{\quad} \text{C}_5\text{H}_5(\text{g}) + \underline{\quad} \text{Fe}(\text{s}) \rightarrow \underline{\quad} \text{Fe}(\text{C}_5\text{H}_5)_2(\text{s})$
- 11) $\underline{\quad} \text{SeCl}_6(\text{s}) + \underline{\quad} \text{O}_2(\text{g}) \rightarrow \underline{\quad} \text{SeO}_2(\text{s}) + \underline{\quad} 3\text{Cl}_2(\text{g})$
- 12) $\underline{\quad} \text{MgI}_2(\text{aq}) + \underline{\quad} \text{Mn}(\text{SO}_3)_2(\text{aq}) \rightarrow \underline{\quad} \text{MgSO}_3(\text{l}) + \underline{\quad} \text{MnI}_4(\text{l})$
- 13) $\underline{\quad} \text{O}_3(\text{g}) \rightarrow \underline{\quad} \text{O}(\text{g}) + \underline{\quad} \text{O}_2(\text{g})$
- 14) $\underline{\quad} \text{NO}_2(\text{g}) \rightarrow \underline{\quad} \text{O}_2(\text{g}) + \underline{\quad} \text{N}_2(\text{g})$

Name: _____
Hour: _____ Date: _____

Chemistry: Balancing Chemical Equations

Directions: First, balance each of the chemical equations below. Then, classify each reaction as **synthesis**, **decomposition**, **single-replacement**, or **double-replacement**. To earn full credit, write the words **when classifying**.

Balance the equation...

...and classify it.









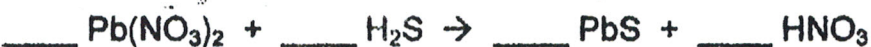


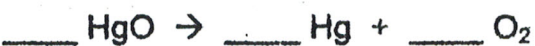




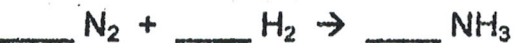








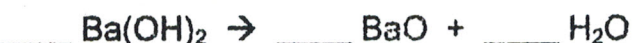










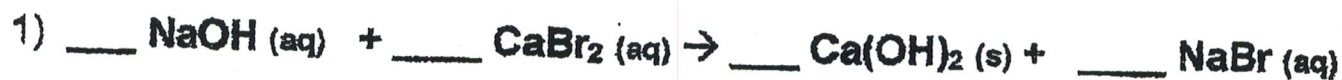


SCIENCE 1206 SUMMARY SHEET NAME: _____
IDENTIFYING CHEMICAL REACTION TYPE and
BALANCING CHEMICAL REACTIONS

For each of the following;

(a) Balance the skeleton equations and

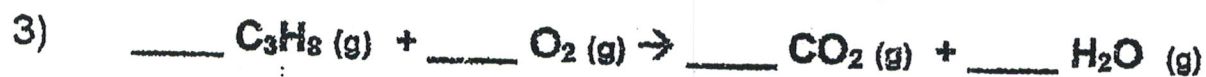
(b) Indicate which of the 5 types of chemical reaction is represented.



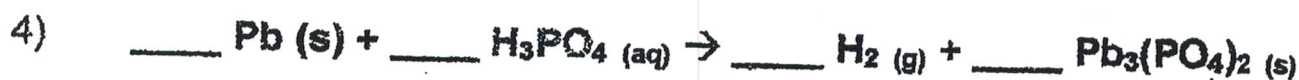
Type of reaction: _____



Type of reaction: _____



Type of reaction: _____



Type of reaction: _____



Type of reaction: _____



Type of reaction: _____



Type of reaction: _____



Type of reaction: _____



Type of reaction: _____

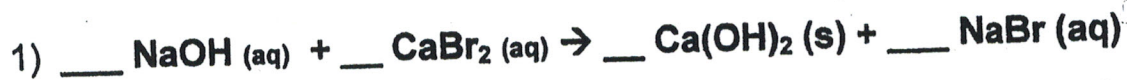
IDENTIFYING/BALANCING CHEMICAL REACTIONS

For each of the following:

(a) Choose the correct responses for the balancing of each reaction.

(b) Identify the reaction type.

Write your answers on the summary sheet.



A. 1,1,1,1

B. 2,1,1,2

C. 2,2,1,2

Type of reaction: _____

A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 1,3,2

B. 1,3,1

C. 1,2,1

Type of reaction: _____

A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 1,3,3,4

B. 1,4,3,4

C. 1,5,3,4

Type of reaction: _____

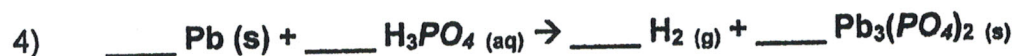
A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 3,2,3,1

B. 3,3,3,1

C. 3,4,3,1

Type of reaction: _____

A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion

KEY



- A. 1,2,2,1
- B. 1,3,2,1
- C. 1,3,3,1

Type of reaction: _____

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



- A. 3,1,1,1
- B. 3,1,3,1
- C. 3,1,2,1

Type of reaction: _____

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



- A. 1,2,1
- B. 1,2,2
- C. 2,2,3

Type of reaction: _____

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



- A. 1,2,1
- B. 2,1,2
- C. 2,2,1

Type of reaction: _____

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



A. 2,1,2

B. 2,1,3

C. 2,2,1

Type of reaction: _____

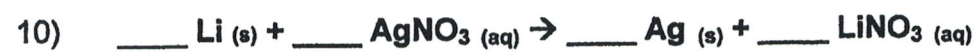
A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 3,2,1,1

B. 2,1,1,1

C. 1,1,1,1

Type of reaction: _____

A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion

A Voyage through Equations

After working on this set of worksheets (there are three), you should be able to do the following:

Section 1: Identify the type of reaction

For the following reactions, indicate whether the following are examples of synthesis, decomposition, single replacement (displacement), double replacement (displacement), or combustion.

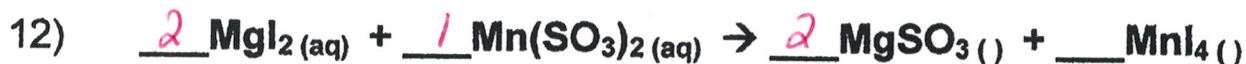
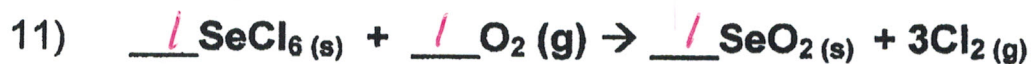
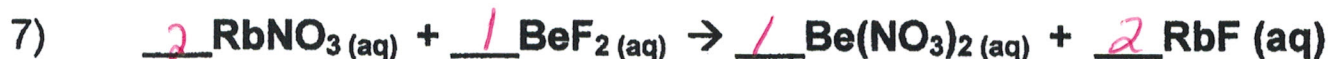
- 1) $\text{Na}_3\text{PO}_4 + 3 \text{KOH} \rightarrow 3 \text{NaOH} + \text{K}_3\text{PO}_4$ Double Replacement
- 2) $\text{MgCl}_2 + \text{Li}_2\text{CO}_3 \rightarrow \text{MgCO}_3 + 2 \text{LiCl}$ Double Replacement
- 3) $\text{C}_6\text{H}_{12} + 9 \text{O}_2 \rightarrow 6 \text{CO}_2 + 6 \text{H}_2\text{O}$ Combustion
- 4) $\text{Pb} + \text{FeSO}_4 \rightarrow \text{PbSO}_4 + \text{Fe}$ Single Replacement
- 5) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ Decomposition
- 6) $\text{P}_4 + 3 \text{O}_2 \rightarrow 2 \text{P}_2\text{O}_3$ Synthesis
- 7) $2 \text{RbNO}_3 + \text{BeF}_2 \rightarrow \text{Be}(\text{NO}_3)_2 + 2 \text{RbF}$ Double Replacement
- 8) $2 \text{AgNO}_3 + \text{Cu} \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$ Single Replacement
- 9) $\text{C}_3\text{H}_6\text{O} + 4 \text{O}_2 \rightarrow 3 \text{CO}_2 + 3 \text{H}_2\text{O}$ Combustion
- 10) $2 \text{C}_5\text{H}_5 + \text{Fe} \rightarrow \text{Fe}(\text{C}_5\text{H}_5)_2$ Synthesis
- 11) $\text{SeCl}_6 + \text{O}_2 \rightarrow \text{SeO}_2 + 3 \text{Cl}_2$ Single Replacement
- 12) $2 \text{MgI}_2 + \text{Mn}(\text{SO}_3)_2 \rightarrow 2 \text{MgSO}_3 + \text{MnI}_4$ Double Replacement
- 13) $\text{O}_3 \rightarrow \text{O} + \text{O}_2$ Decomposition
- 14) $2 \text{NO}_2 \rightarrow 2 \text{O}_2 + \text{N}_2$ Decomposition

***SCIENCE 1206 Section 2:

For each of the following skeleton chemical equations:

a) Identify the type of reaction. Remember that the five identifiable types of reactions are **synthesis (composition)**, **decomposition**, **single displacement (replacement)**, **double displacement (replacement)**, and **hydrocarbon combustion**.

b) Balance the equation.



Name: _____
Hour: _____ Date: _____

Chemistry: Balancing Chemical Equations

Directions: First, balance each of the chemical equations below. Then, classify each reaction as **synthesis**, **decomposition**, **single-replacement**, or **double-replacement**. To earn full credit, write the words **o** when classifying.

Balance the equation...

...and classify it.



Synthesis



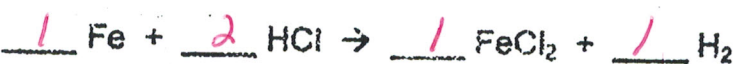
Synthesis



Decomposition



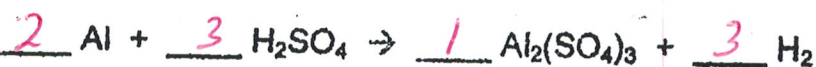
Decomposition



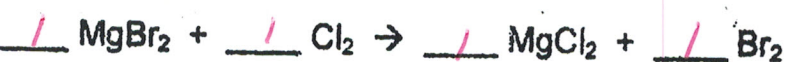
Single Replacement



Single Replacement



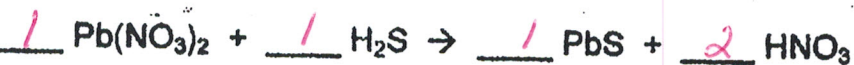
Single Replacement



Single Replacement



Single Replacement



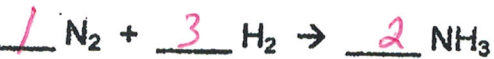
Double Replacement



Decomposition



Decomposition



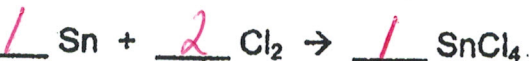
Synthesis



Single Replacement



Single Replacement



Synthesis



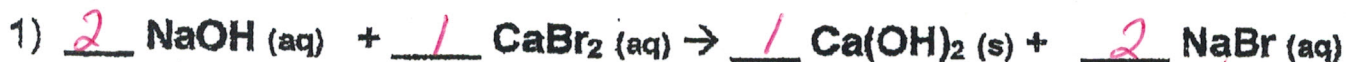
Decomposition

SCIENCE 1206 SUMMARY SHEET NAME: _____
IDENTIFYING CHEMICAL REACTION TYPE and
BALANCING CHEMICAL REACTIONS

For each of the following;

(a) Balance the skeleton equations and

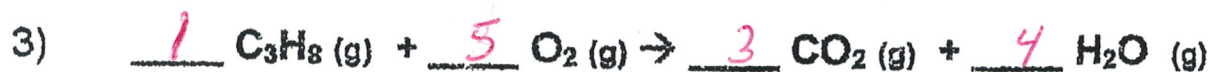
(b) Indicate which of the 5 types of chemical reaction is represented.



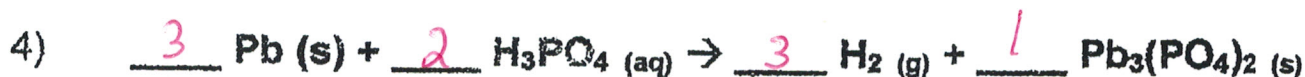
Type of reaction: Double Replacement



Type of reaction: Synthesis



Type of reaction: Combustion



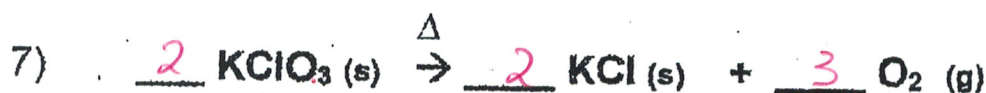
Type of reaction: Single Replacement



Type of reaction: Double Replacement



Type of reaction: Double Replacement



Type of reaction: Decomposition



Type of reaction: Synthesis



Type of reaction: Decomposition

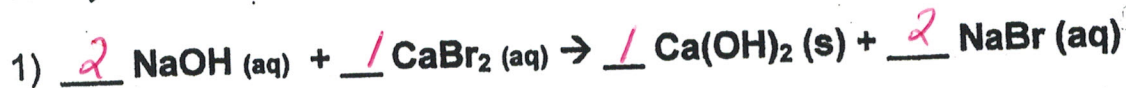
IDENTIFYING/BALANCING CHEMICAL REACTIONS

For each of the following:

(a) Choose the correct responses for the balancing of each reaction.

(b) Identify the reaction type.

Write your answers on the summary sheet.



A. 1,1,1,1

B. 2,1,1,2

C. 2,2,1,2

Type of reaction: Double Replacement

A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 1,3,2

B. 1,3,1

C. 1,2,1

Type of reaction: Synthesis

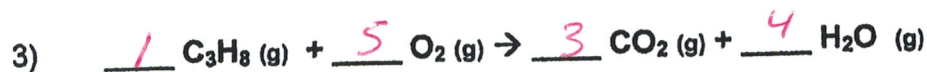
A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 1,3,3,4

B. 1,4,3,4

C. 1,5,3,4

Type of reaction: Combustion

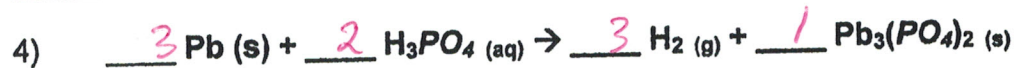
A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 3,2,3,1

B. 3,3,3,1

C. 3,4,3,1

Type of reaction: Single Replacement

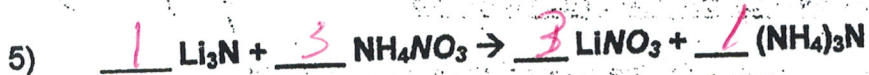
A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



- A. 1,2,2,1
- B. 1,3,2,1
- C. 1,3,3,1

Type of reaction: Double Replacement

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



- A. 3,1,1,1
- B. 3,1,3,1
- C. 3,1,2,1

Type of reaction: Double Replacement

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



- A. 1,2,1
- B. 1,2,2
- C. 2,2,3

Type of reaction: Decomposition

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



- A. 1,2,1
- B. 2,1,2
- C. 2,2,1

Type of reaction: Synthesis

- A. synthesis
 - B. decomposition
 - C. single replacement
 - D. double replacement
 - E. combustion
-



A. 2,1,2

B. 2,1,3

C. 2,2,1

Type of reaction: decomposition

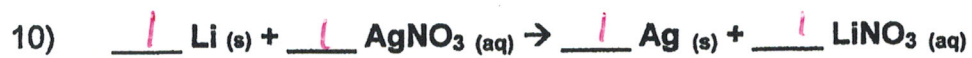
A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion



A. 3,2,1,1

B. 2,1,1,1

C. 1,1,1,1

Type of reaction: Single Replacement

A. synthesis

B. decomposition

C. single replacement

D. double replacement

E. combustion
