

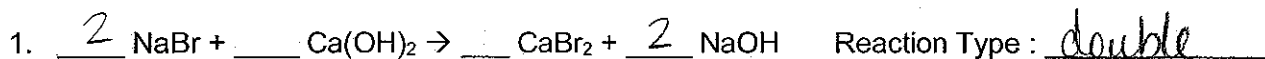
Ch. 11 Study Guide

Know these things.

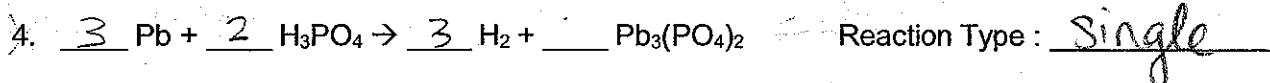
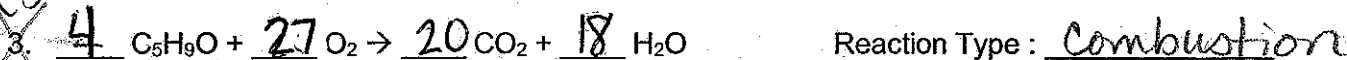
- ✓ Know and be able to recognize the 5 types of chemical reactions
- ✓ How to read chemical equations including the different symbols
- ✓ How to balance chemical equations using coefficients
- ✓ How to count the number of atoms in a compound
- ✓ The difference between reactants and products
- ✓ Understand, recognize, and be able to write word equations, skeleton equations, and balanced equations
- ✓ What a catalyst is and does, and how to represent it in an equation
- ✓ What the activity series is and how to use it
- ✓ The difference between coefficients and subscripts
- ✓ What elements exist as diatomic when found by themselves

Here are some practice problems.

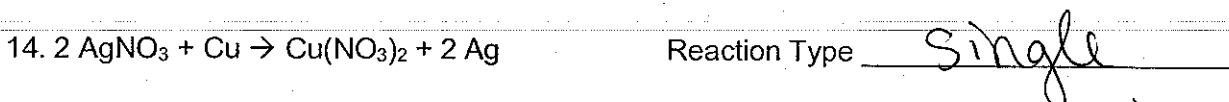
Balance the reactions **1 to 6** and indicate which type of chemical reaction (synthesis, decomposition, single-displacement, double-displacement or combustion) is being represented:



Can solve!



Indicate which type of chemical reaction (synthesis, decomposition, single-displacement, double-displacement or combustion) is being represented in 7 to 15.



Answer the following with either a symbol or a meaning.

(aq) → aqueous, dissolved in H_2O

Heat is added to the reaction → Δ

Solid, liquid, gas → (s), (l), (g)

+ → separates products or reactants

\leftrightarrow → reaction is reversible

Catalyst is used → $\xrightarrow{\text{MnO}_2}$

Yield, produces, etc → \longrightarrow

On the next page, determine how many atoms are in the compounds.

Directions for each problem

- 1) write down the different elements in each compound.
- 2) write down how many of that particular atom there are
- 3) how many atoms are there total in the compound.

1) 4 HNO₃

$$\begin{array}{r} \text{H} - 4 \\ \text{N} - 4 \\ \text{O} - 12 \\ \hline 20 \end{array}$$

2) 4 Mg(OH)₂

$$\begin{array}{r} \text{Mg} - 4 \\ \text{O} - 8 \\ \text{H} - 8 \\ \hline 20 \end{array}$$

3) 5 ZnSO₄

$$\begin{array}{r} \text{Zn} - 5 \\ \text{S} - 5 \\ \text{O} - 20 \\ \hline 30 \end{array}$$

4) 2 Sr₃(PO₄)₂

$$\begin{array}{r} \text{Sr} - 6 \\ \text{P} - 4 \\ \text{O} - 16 \\ \hline 26 \end{array}$$

5) 4 Al(OH)₃

$$\begin{array}{r} \text{Al} - 4 \\ \text{O} - 12 \\ \text{H} - 12 \\ \hline 28 \end{array}$$

6) Ca (C₂H₃O₂)₂

$$\begin{array}{r} \text{Ca} - 1 \\ \text{C} - 4 \\ \text{H} - 6 \\ \text{O} - 4 \\ \hline 15 \end{array}$$

7) 4 Al₂(SO₃)₃

$$\begin{array}{r} \text{Al} - 8 \\ \text{S} - 12 \\ \text{O} - 36 \\ \hline 56 \end{array}$$

8) 2 (NH₄)₃PO₄

$$\begin{array}{r} \text{N} - 6 \\ \text{H} - 24 \\ \text{P} - 2 \\ \text{O} - 8 \\ \hline 40 \end{array}$$

9) 4 Mg(OH)₂

$$\begin{array}{r} \text{Mg} - 4 \\ \text{O} - 8 \\ \text{H} - 8 \\ \hline 20 \end{array} \quad \begin{array}{l} \text{- same as} \\ \text{\# 2} \end{array}$$

Activity Series of Metals	
Name	Symbol
Lithium	Li
Calcium	Ca
Sodium	Na
Magnesium	Mg
Aluminum	Al
Zinc	Zn
Iron	Fe
Lead	Pb
Copper	Cu
Mercury	Hg
Silver	Ag

decreasing

Complete the following word equations by performing a single-replacement reaction and writing the skeleton equation. Some may have no reaction at all, in which you should indicate that as well – use the activity series. Then, write the final, balanced equation for each.

1. Copper (II) sulfide + Magnesium →

Skeleton equation: $\text{CuS} + \text{Mg} \rightarrow \text{MgS} + \text{Cu}$

Balanced equation: *balanced already*

2. Mercury + Silver (I) chloride →

Skeleton equation: $\text{Hg} + \text{AgCl} \rightarrow \text{HgCl}_2 + \text{Ag}$

Balanced equation: $\text{Hg} + 2\text{AgCl} \rightarrow \text{HgCl}_2 + 2\text{Ag}$

3. Bromine + Cesium chloride →

Skeleton equation: $\text{Br} + \text{CsCl} \rightarrow$ will not react

Balanced equation: *N/A*

4. Sodium bromide + Fluorine →

Skeleton equation: $\text{NaBr} + \text{F}_2 \rightarrow \text{NaF} + \text{Br}_2$

Balanced equation: $2\text{NaBr} + \text{F}_2 \rightarrow 2\text{NaF} + \text{Br}_2$

(Br is less reactive than Cl - see me if you don't understand)

Handwritten notes at the top of the page, including the word "and" and some illegible scribbles.

Handwritten notes in the middle section, including the phrase "AS A" and other faint markings.

Handwritten notes at the bottom of the page, including the word "and" and other illegible scribbles.