

Name:

## WP Practice

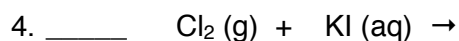
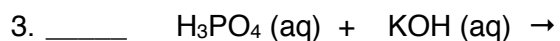
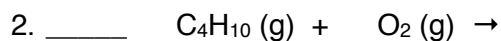
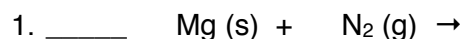
### Exam 4: Chemical Equations

(Also review pretest packet for Unit 8: Chemical Equations)

Writing and Balancing Reactions:

Write and/or complete and balance the following chemical equations (assume all reactions take place). In the space provided, use letters (A-G) to indicate the best classification of the reaction.

- A. Combination or synthesis reactions
- B. Decomposition reactions
- C. Single-replacement reactions cationic
- D. Single-replacement reactions anionic
- E. Double-replacement reactions neutralization
- F. Double-replacement reactions precipitation
- G. Combustion reactions



5. \_\_\_\_\_ Aqueous barium nitrate is added to aqueous sodium sulfate, producing solid barium sulfate and aqueous sodium nitrate.

6. \_\_\_\_\_ Sodium metal reacts with water to produce aqueous sodium hydroxide and hydrogen gas.

7. \_\_\_\_\_ Phosphoric acid reacts with aqueous potassium hydroxide to produce aqueous potassium phosphate and water.

## Oxidation-Reduction Reactions (Redox) at-a-glance

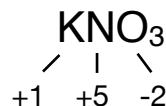
Redox reactions involve electrons transferring from one element to another. In all redox reactions, one element will be oxidized and one reduced.

### Oxidation Numbers

A method, similar to charge, designed to keep track of electrons in redox reactions. For a compound, the sum of all oxidation numbers will equal zero.

	Oxidation Number
Oxygen	-2
Group 1 metals	+1
Group 2 metals	+2

Example:



Determine nitrogen's oxidation number:

$$\begin{aligned} (+1) + N + 3(-2) &= 0 \\ N &= +5 \end{aligned}$$

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- Oxidation Is a Loss of electrons (oxidation number increases)
- Reduction Is a Gain of electrons (oxidation number decreases)
- Oxidizing agents are reduced
- Reducing agents are oxidized

### Redox Reaction Facts:

- Halogens like to gain electrons (oxidizing agents)
- Alkali metals like to lose electrons (reducing agents)
- Oxidized metals become metal ions
- Double-replacement reactions are NOT redox

### Redox Practice

8. A substance that gains electrons is \_\_\_\_\_ and acts as a(n) \_\_\_\_\_ agent.

- A) Oxidized; oxidizing
- B) oxidized; reducing
- C) reduced; oxidizing
- D) reduced; reducing

9. Which reaction is **not** an example of a redox reaction?

- A)  $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- B)  $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$
- C)  $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \rightarrow \text{PbI}_2 + 2\text{KNO}_3$
- D)  $2\text{Al} + 3\text{CuSO}_4 \rightarrow 3\text{Cu} + \text{Al}_2(\text{SO}_4)_3$

10. The oxidation number of nitrogen in sodium nitrite,  $\text{NaNO}_2$ , is \_\_\_\_\_.

- A) +4
- B) +3
- C) 0
- D) -2

11. The oxidation number of sulfur in magnesium sulfite,  $\text{MgSO}_3$ , is \_\_\_\_\_.

- A) +4
- B) +3
- C) 0
- D) -2

12. All of the statements regarding redox reactions are true **except**

- A) An oxidizing agent causes another substance to be oxidized.
- B) Alkali metals are usually reducing agents.
- C) Halogens are usually oxidizing agents.
- D) When a substance is reduced, its oxidation number increases.