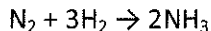


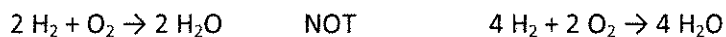
Balancing Equations

1. Balanced equations have the same number of each element on BOTH sides of the equation. This follows the Law of Conservation of Matter. If you start with two nitrogen atoms, you must end up with two nitrogen atoms.



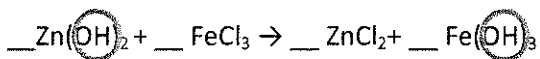
There are two N atoms on both sides of the arrow. There are six H atoms on both sides of the arrow.

2. NEVER change any part of the chemical formula to balance the equation. You can only change the subscript at the beginning.
3. Balance one element at a time, then move on to a different element. Sometimes you might have to go back and fix anything that might have changed.
4. Always use the lowest possible whole number ratios when balancing.



Practice:

- a. $__ \text{P} + __ \text{O}_2 \rightarrow __ \text{P}_4\text{O}_{10}$
 - b. $__ \text{Mg} + __ \text{N}_2 \rightarrow __ \text{Mg}_3\text{N}_2$
 - c. $__ \text{Al} (\text{s}) + __ \text{O}_2 (\text{g}) \rightarrow __ \text{Al}_2\text{O}_3 (\text{s})$
5. If a polyatomic ion is the same on both sides of the arrow, you can circle it and treat it like an element instead of breaking it apart into all the elements. This makes your life much easier!



To balance this equation, start with Zn. Then balance all your OH (treating it like one thing), then Fe, then Cl.

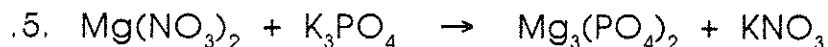
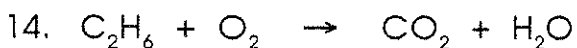
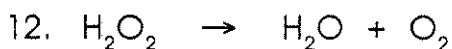
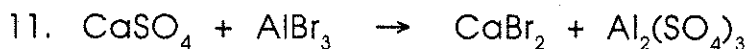
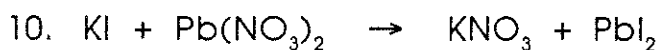
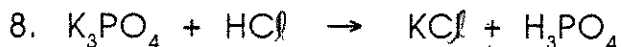
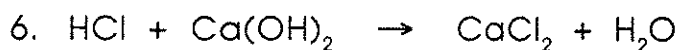
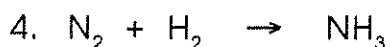
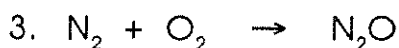
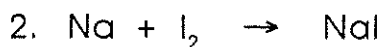
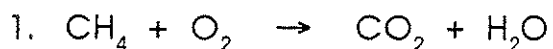
Practice:

- a. $__ \text{AgNO}_3 + __ \text{Cu} \rightarrow __ \text{Ag} + __ \text{Cu}(\text{NO}_3)_2$
- b. $__ \text{Na} + __ \text{H}(\text{OH}) \rightarrow __ \text{H}_2 + __ \text{NaOH}$
- c. $__ \text{CH}_4 + __ \text{O}_2 \rightarrow __ \text{CO}_2 + __ \text{H}_2\text{O}$
- d. $__ \text{NaOH} + __ \text{Fe}(\text{NO}_3)_3 \rightarrow __ \text{Fe}(\text{OH})_3 + __ \text{NaNO}_3$
- e. $__ \text{HgO} \rightarrow __ \text{Hg} + __ \text{O}_2$

BALANCING EQUATIONS

Name _____

Balance the following chemical equations.



WORD EQUATIONS

Name _____

Write the word equations below as chemical equations and balance.

1. zinc + lead (II) nitrate yield zinc ^(II) nitrate + lead

2. aluminum bromide + chlorine yield aluminum chloride + bromine

3. sodium phosphate + calcium chloride yield calcium phosphate +
sodium chloride

4. potassium chlorate when heated yields potassium chloride + oxygen gas

5. aluminum + hydrochloric acid yield aluminum chloride + hydrogen gas

6. calcium hydroxide + phosphoric acid yield calcium phosphate + water

7. copper + sulfuric acid yield copper (II) sulfate + water + sulfur dioxide

8. hydrogen + nitrogen monoxide yield water + nitrogen

WORD EQUATIONS

Name _____

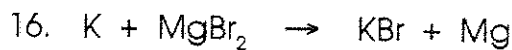
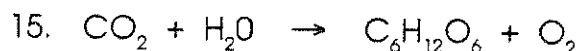
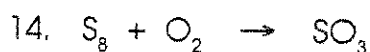
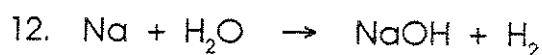
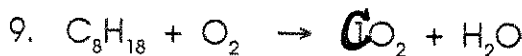
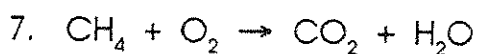
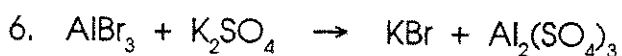
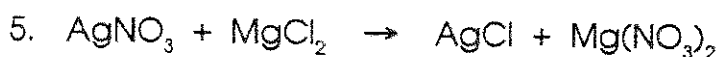
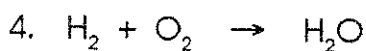
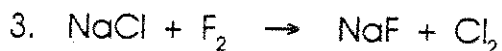
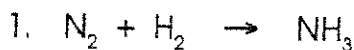
Write and balance the following chemical equations.

1. Hydrogen plus oxygen yield water.
2. Nitrogen plus hydrogen yield ammonia.
3. Aluminum bromide plus chlorine yield aluminum chloride and bromine.
4. Hydrochloric acid plus sodium hydroxide yield sodium chloride plus water.
5. Iron plus lead (II) sulfate react forming iron (II) sulfate plus lead.
6. Potassium chlorate when heated produces potassium chloride plus oxygen gas.
7. Sulfuric acid decomposes to form sulfur trioxide gas plus water.
8. Sodium oxide combines with water to make sodium hydroxide.
9. Potassium iodide reacts with bromine forming potassium bromide plus iodine.
10. Sodium phosphate reacts with calcium nitrate to produce sodium nitrate plus calcium phosphate.
11. Zinc reacts with iron (III) chloride yielding zinc chloride plus iron precipitate.
12. Ammonium carbonate and magnesium sulfate react to yield ammonium sulfate plus magnesium carbonate.
13. Phosphoric acid plus calcium hydroxide react forming solid calcium phosphate plus water.
14. Aluminum plus oxygen gas form aluminum oxide under certain conditions.
15. Nitrogen gas plus oxygen gas react and form dinitrogen pentoxide.

BALANCING CHEMICAL EQUATIONS

Name _____

Rewrite and balance the equations below.



Equations
WRITING BALANCED CHEMICAL EQUATIONS OR CHEMICAL
REACTIONS (CHAPTER 7) 11

Name: _____ Date: _____

A Chemical Equation is balanced when the same number of each type of atoms are on both sides of the chemical equation. (by the Law of Conservation of Mass)

USE THE PROPER COEFFICIENTS TO BALANCE EACH OF THE FOLLOWING REACTIONS:

