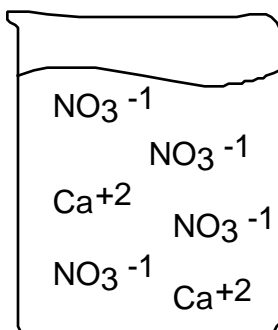


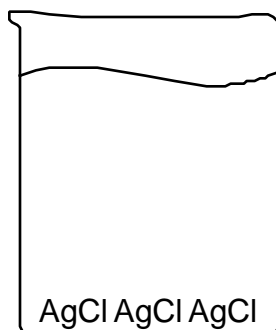
Equation Review Sheet

- You should feel comfortable writing formulas from names and names from formulas. Try going to the ChemTeam website for extra practice in doing this (<http://dbhs.wvusd.k12.ca.us/Nomenclature/Nomenclature.html>). Try looking at the 1st, 2nd, 4th, and 5th tutorials for guides and practice problems at the bottom of those pages. You can also redo some of our homework sheets. You will find the answers if you open the homework sheet online and scroll to the last page.
- You should be able to balance equations.
- You should be able to categorize an equation into one of the five types we have discussed (synthesis, decomposition, single replacement, double replacement, and combustion)
- Given a word description of a reaction you should be able to write a balanced chemical reaction showing what happened using formulas.
- What are the reactants and what are the products in a chemical equation?
- You should understand conceptually why we balance an equation.
(Conservation of mass, unchangeable identity of atoms in chemical reactions.)
- Understand how the balanced equation shows the simplest whole number ratio for how substances react together to form new substances.
- You should understand how various substances dissolve in water. You should be able to illustrate this. For example:

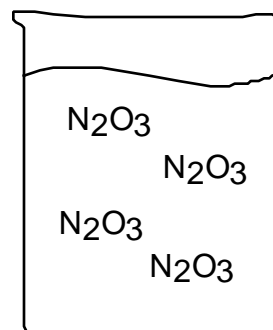
Calcium Nitrate
Ca(NO₃)₂
Ionic
soluble in water



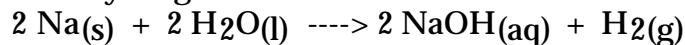
Silver Chloride
AgCl
Ionic
insoluble in water



Dinitrogen Trioxide
N₂O₃
Molecular
soluble in water



- What is the difference between an ionic compound and a molecular compound?
- What is a precipitate and when will it form?
- You should be able to use the proper states of matter in your equations (g), (s), (l), and (aq). For example: Sodium metal reacts with water to form sodium hydroxide and hydrogen.



Try adding these to your Common Chemical Reactions equations.

- You should be able to take a paragraph description of what happens in a reaction and write this out as a balanced chemical equation.
- Given a set of common chemical reaction templates, you should be able to determine which substances are necessary to perform a desired reaction.

- Things to watch out for and memorize:
 - Pure elements don't have a charge.
 - Don't forget about the seven diatomic elements: H₂, N₂, O₂, F₂, Cl₂, Br₂, I₂
 - Memorize the three acids: Nitric (HNO₃), Sulfuric (H₂SO₄), and Acetic (HC₂H₃O₂)
 - Hydroxide (OH⁻¹) is a polyatomic ion and requires parentheses if you want more than one. For example, NaOH and Ca(OH)₂
 - Think about the type of substance (element, ionic, molecular, acid) before writing any names or formulas.

Practice problems for equation writing:

Write the formula for the following names of substances-

Sodium hydroxide, Calcium oxide, Sodium, Calcium phosphate, Hydrogen, Diphosphorous pentoxide, water, Aluminum, Copper(II) chloride, copper, Aluminum chloride

Write the following word equation as a formula equation:

aluminum + copper(II) chloride ---> aluminum chloride + copper

What type of reaction is this?

Write chemical equations from the following descriptions of reactions:

- If you heat calcium oxide and diphosphorous pentoxide together they will react to form calcium phosphate. What type of reaction is this?

- If you drop some sodium in water they will react producing hydrogen gas and sodium hydroxide. What type of reaction is this?

Answers:

NaOH, CaO, Na, Ca₃(PO₄)₂, H₂, P₂O₅, H₂O, Al, CuCl₂, Cu, AlCl₃

Al + 3 CuCl₂ ----> 2 AlCl₃ + Cu (single replacement)

3 CaO + P₂O₅ ----> Ca₃(PO₄)₂ (synthesis)

2 Na + 2 H₂O ----> H₂ + 2 NaOH (single replacement)