

RULES FOR PREDICTING PRODUCTS OF SYNTHESIS/DECOMPOSITION

1. Element + Element (or Br, I, N, Cl, H₂O, F₂) \rightleftharpoons binary compound
2. Metallic oxide + CO₂ \rightleftharpoons metallic carbonate
3. Metallic oxide + H₂O \rightleftharpoons metallic hydroxide
4. Non-metallic oxide + H₂O \rightleftharpoons acid that starts with an H
5. Binary Salt + O₂ \rightleftharpoons metallic chlorate
M/NM

RECIPE: NET IONIC EQUATIONS (SPECTATOR IONS)

1. Write the products of a double replacement reaction or of a single replacement reaction.
2. Decide if the double replacement reaction goes to completion by consulting the solubility chart. *Going to completion means at least one of the products in a solid, liquid, or a gas.*

Decide if the single replacement reaction goes to completion by consulting the Activity Series of Metals list. *If the lone metal is higher on the activity series chart, than the metal in the ionic compound then there is a reaction and products are formed.*

3. Balance the equation.
4. Separate the ions in the ionic compounds only if they are in the aqueous phase. *Write down how many of each ion, its charge, and its state, which must be aqueous.*
5. Cross out the spectator ions. *Spectator ions are the same on each side, including phase (aqueous), therefore, they don't participate in the reaction.*
6. Rewrite the equations without the spectator ions.
7. Check to see that the charge and the mass (# of atoms) is the same on each side.