

WORKSHEET: Net Ionic Equations

The key to writing correct net ionic equations is in knowing which substances to rewrite as ions and which substances to leave unchanged.

1. Strong electrolytes exist in solution as ions and must *always* be written as ions for reactions in solution

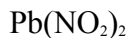
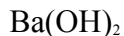
Strong Electrolytes: strong acids
strong bases
soluble salts

2. Weak and non electrolytes exist predominantly as molecules or formula units in solution and must *never* be broken up when writing equations for reactions in solution.

Weak Electrolytes: weak acids
weak bases
Non Electrolytes: insoluble salts and bases
gases
metals
diatomic molecules
all others not described above

Decision Tree Practice:

Identify each of the following substances as strong acid, weak acid, strong base, weak base, insoluble base, soluble salt, insoluble salt, molecular liquid, molecular gas, or insoluble element. Then write each substance as ions or not as ions in accordance with the decision tree.



AgBr

MgBr₂

MgCO₃

CuS

CO₂

HBr

HF

Al

H₃PO₄

H₂S

LiHCO₃

Fe(OH)₃

CaSO₄

Fe(C₂H₃O₂)₂

K₂SO₄

HNO₃

H₂CO₃

ZnS

NOTE: When H₂CO₃, H₂SO₃ or NH₄OH are formed as products, they do break down, though not into ions. They break down into H₂O and a gaseous substance.

For each of the following, write the molecular equation (balanced, of course), the total ionic equation (still balanced), and the net ionic equation (also balanced). If examination of the total ionic equation reveals that there is no net reaction, then for the net ionic equation write the words "No Reaction."

1. Aluminum metal is added to nitric acid solution. (single replacement)
2. A lead (II) nitrate solution is added to a calcium acetate solution. (double replacement)
3. A sulfuric acid solution is added to a solution of potassium hydrogen carbonate. (double replacement)
4. A barium nitrate solution is added to a sodium sulfate solution. (double replacement)
5. A sodium hydroxide solution is added to a phosphoric acid solution. Assume that 2 of the hydrogens in phosphoric acid react.