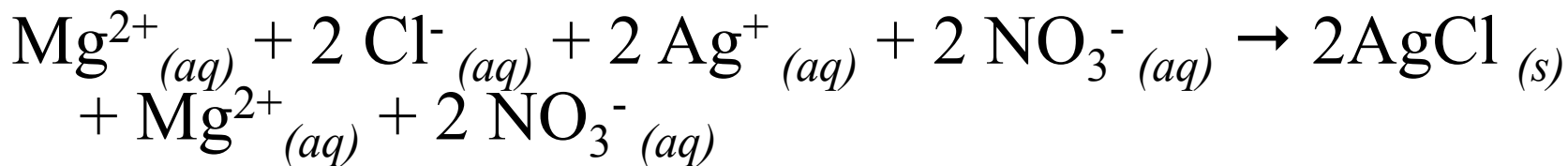# Net Ionic Equations

Many times a reaction occurs with only parts of the compounds changing form. The parts that don't do anything, "just sit around and watch" are called spectator ions.

To write a net ionic equation there are three steps:

1. write a "normal" balanced equation.

2. break the aqueous *(aq)* compounds into ions

3. "drop out" any ions that are the same on both sides.
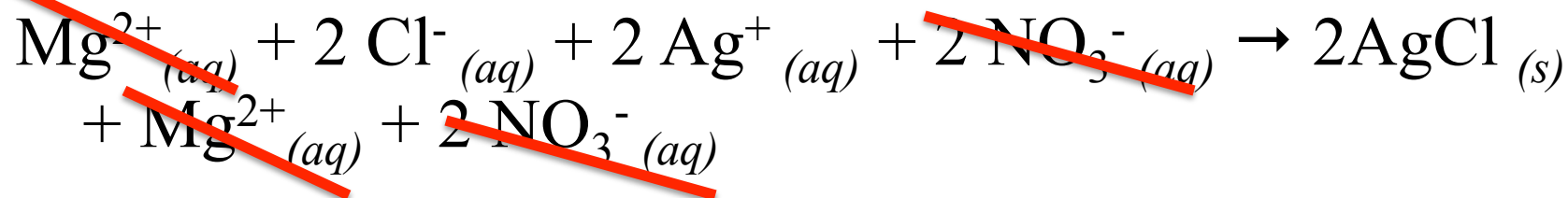
Example

Magnesium chloride solution reacts with silver nitrate solution to form a precipitate (solid) of silver chloride and magnesium nitrate solution.
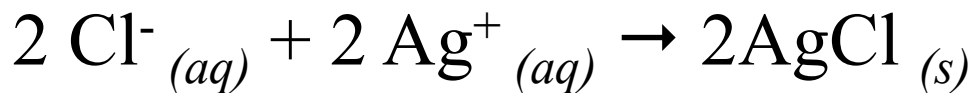
$MgCl_2$ $_{(aq)}$ + 2 $AgNO_3$ $_{(aq)}$ → 2AgCl $_{(s)}$ + $Mg(NO_3)_2$ $_{(aq)}$

Mg^{2+} $_{(aq)}$ + 2 Cl^- $_{(aq)}$ + 2 Ag^+ $_{(aq)}$ + 2 NO_3^- $_{(aq)}$ → 2AgCl $_{(s)}$ + Mg^{2+} $_{(aq)}$ + 2 NO_3^- $_{(aq)}$

This is the total ionic equation

Example

$Mg^{2+}_{(aq)}$ + 2 $Cl^-_{(aq)}$ + 2 $Ag^+_{(aq)}$ + 2 $NO_3^-_{(aq)}$ → 2AgCl $_{(s)}$ + $Mg^{2+}_{(aq)}$ + 2 $NO_3^-_{(aq)}$

magnesium ion and nitrate ion are spectators

2 $Cl^-_{(aq)}$ + 2 $Ag^+_{(aq)}$ → 2AgCl $_{(s)}$

This is the net ionic equation – the ionic equation without spectator ions.