1.    barium nitrate with sulphuric acid

Molecular:     $Ba(NO_3)_2$    + $H_2SO_4$    ➜

Ionic:

Net Ionic:

correct reactant formulas

1.  barium nitrate with sulphuric acid

Molecular:     $Ba(NO_3)_2$     + $H_2SO_4$     ➜  $BaSO_4$     +   $HNO_3$
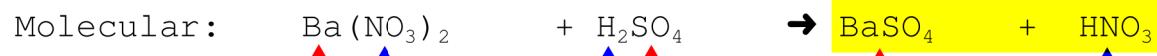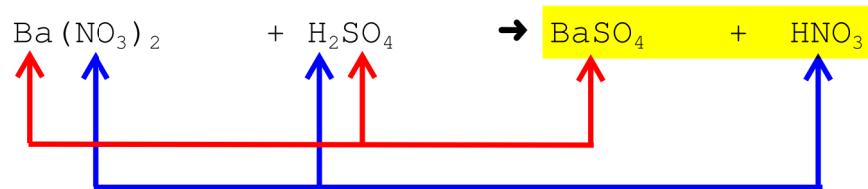
Ionic:

Net Ionic:

double displacement products

1.  barium nitrate with sulphuric acid

Molecular:    $Ba(NO_3)_2$    + $H_2SO_4$    ➡ $BaSO_4$    + 2$HNO_3$
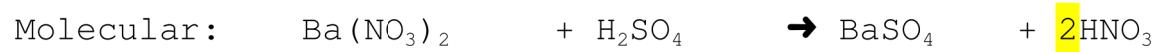
Ionic:

Net Ionic:

balancing

1.  barium nitrate with sulphuric acid

Molecular:     $Ba(NO_3)_2$ (aq)  + $H_2SO_4$ (aq) ➔ $BaSO_4$ (s)  + $2HNO_3$ (aq)

Ionic:

Net Ionic:

adding states
  - see solubility rules
  - soluble = (aq)
  - insoluble = (s)

1.    barium nitrate with sulphuric acid

Molecular:        $Ba(NO_3)_2(aq) + H_2SO_4(aq) \rightarrow BaSO_4(s) + 2HNO_3(aq)$

Ionic:        $Ba^{2+}(aq) + NO_3^{1-}(aq) + H^{1+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s) + H^{1+}(aq) + NO_3^{1-}(aq)$
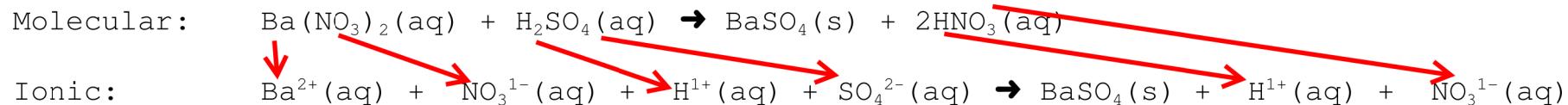
Net Ionic:

show ions
  - soluble will break up into a cation and anion (nomenclature)
  - insoluble remains together in solid state
DO THIS BEFORE CONSIDERING BALANCING

1.    barium nitrate with sulphuric acid
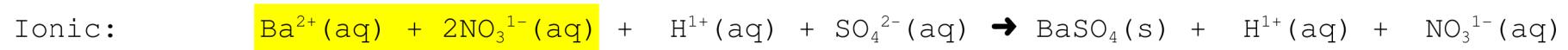
Molecular:     $Ba(NO_3)_2(aq)$ + $H_2SO_4(aq)$ ➜ $BaSO_4(s)$ + $2HNO_3(aq)$

Ionic:     $Ba^{2+}(aq)$ + $2NO_3^{1-}(aq)$ + $H^{1+}(aq)$ + $SO_4^{2-}(aq)$ ➜ $BaSO_4(s)$ + $H^{1+}(aq)$ + $NO_3^{1-}(aq)$

Net Ionic:          balance

1.  barium nitrate with sulphuric acid

Molecular:     $Ba(NO_3)_2(aq) + \fbox{H_2SO_4(aq)} \rightarrow BaSO_4(s) + 2HNO_3(aq)$

Ionic:     $Ba^{2+}(aq) + 2NO_3^{1-}(aq) + \fbox{2H^{1+}(aq) + SO_4^{2-}(aq)} \rightarrow BaSO_4(s) + H^{1+}(aq) + NO_3^{1-}(aq)$

Net Ionic:                              balance

1. barium nitrate with sulphuric acid

Molecular:      $Ba(NO_3)_2(aq) + H_2SO_4(aq) \rightarrow BaSO_4(s) +$ <mark>$2HNO_3(aq)$</mark>

Ionic:          $Ba^{2+}(aq) + 2NO_3^{1-}(aq) + 2H^{1+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s) +$ <mark>$2H^{1+}(aq) + 2NO_3^{1-}(aq)$</mark>

Net Ionic:                                                                                      balance

1.   barium nitrate with sulphuric acid

Molecular:      $Ba(NO_3)_2(aq) + H_2SO_4(aq) \rightarrow BaSO_4(s) + 2HNO_3(aq)$

Ionic:          $Ba^{2+}(aq) + 2NO_3^{1-}(aq) + 2H^{1+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s) + 2H^{1+}(aq) + 2NO_3^{1-}(aq)$

Net Ionic:      $Ba^{2+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s)$
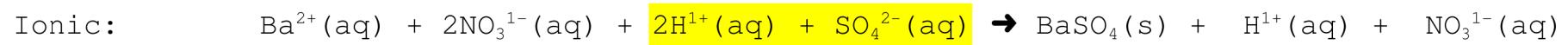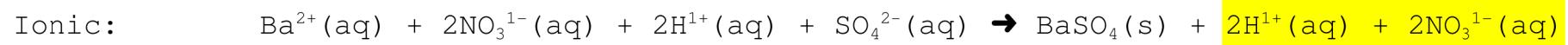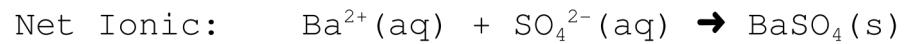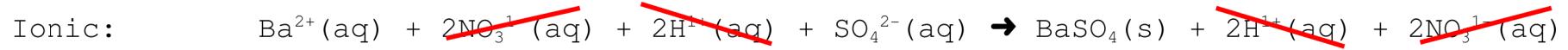
cancel out ions found on both side
write the leftovers

1.  barium nitrate with sulphuric acid

Molecular:     $Ba(NO_3)_2(aq) + H_2SO_4(aq) \rightarrow BaSO_4(s) + 2HNO_3(aq)$

Ionic:         $Ba^{2+}(aq) + 2NO_3^{1-}(aq) + 2H^{1+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s) + 2H^{1+}(aq) + 2NO_3^{1-}(aq)$

Net Ionic:     $Ba^{2+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s)$
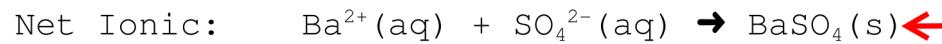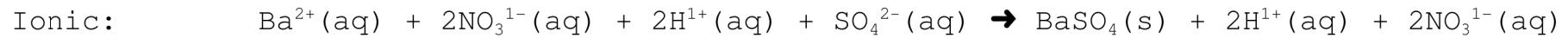
               therefore barium sulphate is the precipitate

the precipitate (ppte for short) is the solid