Writing net Ionic Equations

Write net ionic equations for the following balanced equations. Answers are on the next page.

1. $2\ AgNO_3\ (aq) + CaCl_2\ (aq) \rightarrow 2\ AgCl(s) + Ca(NO_3)_2\ (aq)$

2. $FeCl_2\ (aq) + 2\ KOH\ (aq) \rightarrow Fe(OH)_2\ (s) + 2\ KCl\ (aq)$

3. $Al_2(SO_4)_3\ (aq) + 3\ Pb(NO_3)_2\ (aq) \rightarrow 2\ Al(NO_3)_3\ (aq) + 3\ PbSO_4\ (s)$

4. $Ba\ (s) + MgI_2\ (aq) \rightarrow BaI_2\ (aq) + Mg\ (s)$

5. $H_2SO_4\ (aq) + 2\ KOH\ (aq) \rightarrow K_2SO_4\ (aq) + 2\ H_2O\ (l)$

6. $Zn\ (s) + 2\ HCl\ (aq) \rightarrow ZnCl_2\ (aq) + H_2\ (g)$

7. $Mg\ (s) + FeSO_4\ (aq) \rightarrow MgSO_4\ (aq) + Fe\ (s)$

8. $NaOH\ (aq) + HCl\ (aq) \rightarrow NaCl\ (aq) + H_2O\ (l)$

9. $2\ Li\ (s) + Cu(NO_3)_2\ (aq) \rightarrow Cu\ (s) + 2\ LiNO_3\ (aq)$

Answers:

The balanced equation, an intermediate step and then the net ionic equation are shown.

1. $2\ AgNO_3\ (aq) + CaCl_2\ (aq) \rightarrow 2\ AgCl(s) + Ca(NO_3)_2\ (aq)$
   $2\ Ag^+ + 2\ NO_3^- + Ca^{2+} + 2\ Cl^- \rightarrow 2\ AgCl(s) + Ca^{2+} + 2NO_3^-$
   $2\ Ag^+ + 2\ Cl^- \rightarrow 2\ AgCl(s)$

2. $FeCl_2\ (aq) + 2\ KOH\ (aq) \rightarrow Fe(OH)_2\ (s) + 2\ KCl\ (aq)$
   $Fe^{2+} + 2\ Cl^- + 2\ K^+ + 2\ OH^- \rightarrow Fe(OH)_2\ (s) + 2\ K^+ + 2\ Cl^-$
   $Fe^{2+} + 2\ OH^- \rightarrow Fe(OH)_2\ (s)$

3. $Al_2(SO_4)_3\ (aq) + 3\ Pb(NO_3)_2\ (aq) \rightarrow 2\ Al(NO_3)_3\ (aq) + 3\ PbSO_4\ (s)$
   $2\ Al^{3+} + 3\ SO_4^{2-} + 3\ Pb^{2+} + 6\ NO_3^{1-} \rightarrow 2\ Al^{3+} + 6\ NO_3^{1-} + 3\ PbSO_4\ (s)$
   $SO_4^{2-} + Pb^{2+} \rightarrow PbSO_4\ (s)$

4. $Ba\ (s) + MgI2\ (aq) \rightarrow BaI_2\ (aq) + Mg\ (s)$
   $Ba\ (s) + Mg^{2+} + 2\ I^{1-} \rightarrow Ba^{2+} + 2\ I^{1-} + Mg\ (s)$
   $Ba\ (s) + Mg^{2+} \rightarrow Ba^{2+} + Mg\ (s)$

5. $H_2SO_4\ (aq) + 2\ KOH\ (aq) \rightarrow K_2SO_4\ (aq) + 2\ H_2O\ (l)$
   $2\ H^+ + SO_4^{2-} + 2\ K^+ + 2\ OH^{1-} \rightarrow 2\ K^+ + SO_4^{2-} + 2\ H_2O\ (l)$
   $H^+ + OH^{1-} \rightarrow H_2O\ (l)$

6. $Zn\ (s) + 2\ HCl\ (aq) \rightarrow ZnCl_2\ (aq) + H_2\ (g)$
   $Zn\ (s) + 2\ H^+ + 2\ Cl^{1-} \rightarrow Zn^{2+} + 2\ Cl^{1-} + H_2\ (g)$
   $Zn\ (s) + 2\ H^+ \rightarrow Zn^{2+} + H_2\ (g)$

7. $Mg\ (s) + FeSO_4\ (aq) \rightarrow MgSO_4\ (aq) + Fe\ (s)$
   $Mg\ (s) + Fe^{2+} + SO_4^{2-} \rightarrow Mg^{2+} + SO_4^{2-} + Fe\ (s)$
   $Mg\ (s) + Fe^{2+} \rightarrow Mg^{2+} + Fe\ (s)$

8. $NaOH\ (aq) + HCl\ (aq) \rightarrow NaCl\ (aq) + H_2O\ (l)$
   $Na^{2+} + OH^{1-} + H^+ + Cl^{1-} \rightarrow Na^+ + Cl^{1-} + H_2O\ (l)$
   $OH^{1-} + H^+ \rightarrow H_2O\ (l)$

9. $2\ Li\ (s) + Cu(NO_3)_2\ (aq) \rightarrow Cu\ (s) + 2\ LiNO_3\ (aq)$
   $2\ Li\ (s) + Cu^{2+} + 2\ NO_3^{1-} \rightarrow Cu\ (s) + 2\ Li^+ + 2\ NO_3^{1-}$
   $2\ Li\ (s) + Cu^{2+} \rightarrow Cu\ (s) + 2\ Li^+$