ANSWER KEY

EXTRA PRACTICE: Net Ionic Equations Practice #2

Name:_____

Complete the following net ion equations. Be sure to show *ALL* of your work for full credit. Balance *ALL* equations first. If no reaction occurs, you must still balance the equation, but write **NR** under net ionic equation. Be sure to also carry through your charges and coefficients into the final net ionic equation. ***Hint: Determine if each compound is aqueous (aq) or not first.***

1. 1 $AgNO_3$ (aq) + 1 KCl (aq) → 1 AgCl (s) + 1 KNO_3 (aq)

Complete Ionic:

$1Ag^+_{(aq)} + 1\cancel{NO_3^-}_{(aq)} + 1\cancel{K^+}_{(aq)} + 1Cl^-_{(aq)} \rightarrow 1AgCl_{(s)} + 1\cancel{K^+}_{(aq)} + 1\cancel{NO_3^-}_{(aq)}$

Spectator Ions: $1K^+_{(aq)}$; $1NO_3^-_{(aq)}$

Net Ionic: $1Ag^+_{(aq)} + 1Cl^-_{(aq)} \rightarrow 1AgCl_{(s)}$

2. 1 $Mg(NO_3)_2$ (aq) + 1 Na_2CO_3 (aq) → 1 $MgCO_3$ (s) + 2 $NaNO_3$ (aq)

Complete Ionic:

$1Mg^{2+}_{(aq)} + 2\cancel{NO_3^-}_{(aq)} + 2\cancel{Na^+}_{(aq)} + 1CO_3^{2-}_{(aq)} \rightarrow 1MgCO_{3(s)} + 2\cancel{Na^+}_{(aq)} + 2\cancel{NO_3^-}_{(aq)}$

Spectator Ions: $2Na^+_{(aq)}$; $2NO_3^-_{(aq)}$

Net Ionic: $1Mg^{2+}_{(aq)} + 1CO_3^{2-}_{(aq)} \rightarrow 1MgCO_{3(s)}$

3. 1 $SrBr_2$ strontium bromide (aq) + 1 K_2SO_4 potassium sulfate (aq) → 1 $SrSO_4$ strontium sulfate (s) + 2 KBr potassium bromide (aq)

Complete Ionic:

$1Sr^{2+}_{(aq)} + 2\cancel{Br^-}_{(aq)} + 2\cancel{K^+}_{(aq)} + 1SO_4^{2-}_{(aq)} \rightarrow 1SrSO_{4(s)} + 2\cancel{K^+}_{(aq)} + 2\cancel{Br^-}_{(aq)}$

Spectator Ions: $2K^+_{(aq)}$; $2Br^-_{(aq)}$

Net Ionic: $1Sr^{2+}_{(aq)} + 1SO_4^{2-}_{(aq)} \rightarrow 1SrSO_{4(s)}$

4. 1 $MnCl_2$ manganese (II) chloride (aq) + 1 $(NH_4)_2CO_3$ ammonium carbonate (aq) → 1 $MnCO_3$ manganese (II) carbonate (s) + 2 NH_4Cl ammonium chloride (aq)

Complete Ionic:

$1Mn^{2+}_{(aq)} + 2\cancel{Cl^-}_{(aq)} + 2\cancel{NH_4^+}_{(aq)} + 1CO_3^{2-}_{(aq)} \rightarrow 1MnCO_{3(s)} + 2\cancel{NH_4^+}_{(aq)} + 2\cancel{Cl^-}_{(aq)}$

Spectator Ions: $2NH_4^+_{(aq)}$; $2Cl^-_{(aq)}$

Net Ionic: $1Mn^{2+}_{(aq)} + 1CO_3^{2-}_{(aq)} \rightarrow 1MnCO_{3(s)}$

5. 2 $Cr(NO_3)_3$ chromium (III) nitrate (aq) + 3 $FeSO_4$ iron (II) sulfate (aq) → 1 $Cr_2(SO_4)_3$ chromium (III) sulfate (aq) + 3 $Fe(NO_3)_2$ iron (II) nitrate (aq)

Complete Ionic:

$2Cr^{3+}_{(aq)} + 6NO_3^-_{(aq)} + 3Fe^{2+}_{(aq)} + 3SO_4^{2-}_{(aq)} \rightarrow 2Cr^{3+}_{(aq)} + 6NO_3^-_{(aq)} + 3Fe^{2+}_{(aq)} + 3SO_4^{2-}_{(aq)}$

Spectator Ions: ALL

Net Ionic: NR

Predict the products of the following reactions, and show the complete ionic, spectator ions, and net ionic forms of the equation:

6. 1 K_3PO_4 (aq) + 1 $Al(NO_3)_3$ (aq) → 3 KNO_3 (aq) + 1 $AlPO_4$ (s)

Complete Ionic:

$3K^+_{(aq)} + 1PO_4^{3-}{}_{(aq)} + 1Al^{3+}_{(aq)} + 3NO_3^-{}_{(aq)} \rightarrow 3K^+_{(aq)} + 3NO_3^-{}_{(aq)} + 1AlPO_4{}_{(s)}$

Spectator Ions: $3K^+_{(aq)}$; $3NO_3^-{}_{(aq)}$

Net Ionic: $1Al^{3+}_{(aq)} + 1PO_4^{3-}{}_{(aq)} \rightarrow 1AlPO_4{}_{(s)}$

7. 1 BeI_2 (aq) + 1 Cu_2SO_4 (aq) → 1 $BeSO_4$ (aq) + 2 CuI (aq)

Complete Ionic:

$1Be^{2+}_{(aq)} + 2I^-{}_{(aq)} + 2Cu^+_{(aq)} + 1SO_4^{2-}{}_{(aq)} \rightarrow 1Be^{2+}_{(aq)} + 1SO_4^{2-}{}_{(aq)} + 2Cu^+_{(aq)} + 2I^-{}_{(aq)}$

Spectator Ions: ALL

Net Ionic: NR

8. 1 $Pb(NO_3)_2$ (aq) + 2 KBr (aq) → 1 $PbBr_2$ (s) + 2 KNO_3 (aq)

Complete Ionic:

$1Pb^{2+}_{(aq)} + 2NO_3^-{}_{(aq)} + 2K^+_{(aq)} + 2Br^-{}_{(aq)} \rightarrow 1PbBr_2{}_{(s)} + 2K^+_{(aq)} + 2NO_3^-{}_{(aq)}$

Spectator Ions: $2K^+_{(aq)}$; $2NO_3^-{}_{(aq)}$

Net Ionic: $1Pb^{2+}_{(aq)} + 2Br^-{}_{(aq)} \rightarrow 1PbBr_2{}_{(s)}$

9. 3 $Ba(NO_3)_2$ barium nitrate (aq) + 2 $(NH_4)_3PO_4$ ammonium phosphate (aq) → 1 $Ba_3(PO_4)_2$ (s) + 6 NH_4NO_3 (aq)

Complete Ionic:

$3Ba^{2+}_{(aq)} + 6NO_3^-{}_{(aq)} + 6NH_4^+{}_{(aq)} + 2PO_4^{3-}{}_{(aq)} \rightarrow 1Ba_3(PO_4)_2{}_{(s)} + 6NH_4^+{}_{(aq)} + 6NO_3^-{}_{(aq)}$

Spectator Ions: $6NH_4^+{}_{(aq)}$; $6NO_3^-{}_{(aq)}$

Net Ionic: $3Ba^{2+}_{(aq)} + 2PO_4^{3-}{}_{(aq)} \rightarrow 1Ba_3(PO_4)_2{}_{(s)}$

10. 3 $Sr(OH)_2$ strontium hydroxide (aq) + 2 $FeCl_3$ iron (III) chloride (aq) → 3 $SrCl_2$ (aq) + 2 $Fe(OH)_3$ (s)

Complete Ionic:

$3Sr^{2+}_{(aq)} + 6OH^-{}_{(aq)} + 2Fe^{3+}_{(aq)} + 6Cl^-{}_{(aq)} \rightarrow 3Sr^{2+}_{(aq)} + 6Cl^-{}_{(aq)} + 2Fe(OH)_3{}_{(s)}$

Spectator Ions: $3Sr^{2+}_{(aq)}$; $6Cl^-{}_{(aq)}$

Net Ionic: $2Fe^{3+}_{(aq)} + 6OH^-{}_{(aq)} \rightarrow 2Fe(OH)_3{}_{(s)}$