

Net Ionic Equation Worksheet - answers

- Molecular Equation:**  $2\text{NaCl}(\text{aq}) + \text{Pb}(\text{NO}_3)_2(\text{aq}) \rightarrow \text{PbCl}_2(\text{s}) + 2\text{NaNO}_3(\text{aq})$   
**Ionic Equation:**  $2\text{Na}^+(\text{aq}) + 2\text{Cl}^-(\text{aq}) + \text{Pb}^{2+}(\text{aq}) + 2\text{NO}_3^-(\text{aq}) \rightarrow \text{PbCl}_2(\text{s}) + 2\text{Na}^+(\text{aq}) + 2\text{NO}_3^-(\text{aq})$   
**NIE:**  $2\text{Cl}^-(\text{aq}) + \text{Pb}^{2+}(\text{aq}) \rightarrow \text{PbCl}_2(\text{s})$
- Molecular Equation:**  $\text{Na}_2\text{CO}_3(\text{aq}) + \text{FeCl}_2(\text{aq}) \rightarrow \text{FeCO}_3(\text{s}) + 2\text{NaCl}(\text{aq})$   
**Ionic Equation:**  $2\text{Na}^+(\text{aq}) + \text{CO}_3^{2-}(\text{aq}) + \text{Fe}^{2+}(\text{aq}) + 2\text{Cl}^-(\text{aq}) \rightarrow \text{FeCO}_3(\text{s}) + 2\text{Na}^+(\text{aq}) + 2\text{Cl}^-(\text{aq})$   
**NIE:**  $\text{CO}_3^{2-}(\text{aq}) + \text{Fe}^{2+}(\text{aq}) \rightarrow \text{FeCO}_3(\text{s})$
- Molecular Equation:**  $\text{Mg}(\text{OH})_2(\text{aq}) + 2\text{HCl}(\text{aq}) \rightarrow \text{MgCl}_2(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$   
**Ionic Equation:**  $\text{Mg}^{2+}(\text{aq}) + 2\text{OH}^-(\text{aq}) + 2\text{H}^+(\text{aq}) + 2\text{Cl}^-(\text{aq}) \rightarrow \text{Mg}^{2+}(\text{aq}) + 2\text{Cl}^-(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$   
**NIE:**  $2\text{OH}^-(\text{aq}) + 2\text{H}^+(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l})$   
**(your final answer would be:  $\text{OH}^-(\text{aq}) + \text{H}^+(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l})$  )**
- Molecular Equation:**  $\text{K}_2\text{Cr}_2\text{O}_7(\text{aq}) + \text{CaCl}_2(\text{aq}) \rightarrow 2\text{KCl}(\text{aq}) + \text{CaCr}_2\text{O}_7(\text{aq})$   
**Ionic Equation:**  $2\text{K}^+(\text{aq}) + \text{Cr}_2\text{O}_7^{2-}(\text{aq}) + \text{Ca}^{2+}(\text{aq}) + 2\text{Cl}^-(\text{aq}) \rightarrow 2\text{K}^+(\text{aq}) + 2\text{Cl}^-(\text{aq}) + \text{Ca}^{2+} + \text{Cr}_2\text{O}_7^{2-}$   
**NIE:** N/A, all spectator ions
- Molecular Equation:**  $2(\text{NH}_4)_3\text{PO}_4(\text{aq}) + 3\text{Zn}(\text{NO}_3)_2(\text{aq}) \rightarrow 6\text{NH}_4\text{NO}_3(\text{aq}) + \text{Zn}_3(\text{PO}_4)_2(\text{s})$   
**Ionic Equation:**  $6\text{NH}_4^+(\text{aq}) + 2\text{PO}_4^{3-}(\text{aq}) + 3\text{Zn}^{2+}(\text{aq}) + 6\text{NO}_3^-(\text{aq}) \rightarrow 6\text{NH}_4^+(\text{aq}) + 6\text{NO}_3^-(\text{aq}) + \text{Zn}_3(\text{PO}_4)_2(\text{s})$   
**NIE:**  $2\text{PO}_4^{3-}(\text{aq}) + 3\text{Zn}^{2+}(\text{aq}) \rightarrow \text{Zn}_3(\text{PO}_4)_2(\text{s})$
- Molecular Equation:**  $2\text{LiOH}(\text{aq}) + \text{BaCl}_2(\text{aq}) \rightarrow 2\text{LiCl}(\text{aq}) + \text{Ba}(\text{OH})_2(\text{aq})$   
**Ionic Equation:**  $2\text{Li}^+(\text{aq}) + 2\text{OH}^-(\text{aq}) + \text{Ba}^{2+}(\text{aq}) + 2\text{Cl}^-(\text{aq}) \rightarrow 2\text{Li}^+(\text{aq}) + 2\text{Cl}^-(\text{aq}) + \text{Ba}^{2+} + 2\text{OH}^-$   
**NIE:** N/A, all spectator ions
- Molecular Equation:**  $\text{Na}_2\text{CO}_3(\text{aq}) + 2\text{HCl}(\text{aq}) \rightarrow 2\text{NaCl}(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$   
**Ionic Equation:**  $2\text{Na}^+(\text{aq}) + \text{CO}_3^{2-}(\text{aq}) + 2\text{H}^+(\text{aq}) + 2\text{Cl}^-(\text{aq}) \rightarrow 2\text{Na}^+(\text{aq}) + 2\text{Cl}^-(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$   
**NIE:**  $\text{CO}_3^{2-}(\text{aq}) + 2\text{H}^+(\text{aq}) \rightarrow \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$
- Molecular Equation:**  $\text{Mg}(\text{NO}_3)_2(\text{aq}) + \text{Na}_2\text{CrO}_4(\text{aq}) \rightarrow 2\text{NaNO}_3(\text{aq}) + \text{MgCrO}_4(\text{s})$   
**Ionic Equation:**  $\text{Mg}^{2+}(\text{aq}) + 2\text{NO}_3^-(\text{aq}) + 2\text{Na}^+(\text{aq}) + \text{CrO}_4^{2-}(\text{aq}) \rightarrow 2\text{Na}^+(\text{aq}) + 2\text{NO}_3^-(\text{aq}) + \text{MgCrO}_4(\text{s})$   
**NIE:**  $\text{Mg}^{2+}(\text{aq}) + \text{CrO}_4^{2-}(\text{aq}) \rightarrow \text{MgCrO}_4(\text{s})$

9. **Molecular Equation:**  $2 \text{FeCl}_3(\text{aq}) + 3 \text{Mg}(\text{s}) \rightarrow 3 \text{MgCl}_2(\text{aq}) + 2 \text{Fe}(\text{s})$   
**Ionic Equation:**  $2 \text{Fe}^{3+}(\text{aq}) + 6 \text{Cl}^{-}(\text{aq}) + 3 \text{Mg}(\text{s}) \rightarrow 3 \text{Mg}^{2+}(\text{aq}) + 6 \text{Cl}^{-}(\text{aq}) + 2 \text{Fe}(\text{s})$   
**NIE:**  $2 \text{Fe}^{3+}(\text{aq}) + 3 \text{Mg}(\text{s}) \rightarrow 3 \text{Mg}^{2+}(\text{aq}) + 2 \text{Fe}(\text{s})$
10. **Molecular Equation:**  $\text{BaBr}_2(\text{aq}) + \text{Na}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2 \text{NaBr}(\text{aq})$   
**Ionic Equation:**  $\text{Ba}^{2+}(\text{aq}) + 2 \text{Br}^{-}(\text{aq}) + 2 \text{Na}^{+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2 \text{Na}^{+}(\text{aq}) + 2 \text{Br}^{-}(\text{aq})$   
**NIE:**  $\text{Ba}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s})$
11. **Molecular Equation:**  $2 \text{AgNO}_3(\text{aq}) + \text{MgI}_2(\text{aq}) \rightarrow 2 \text{AgI}(\text{s}) + \text{Mg}(\text{NO}_3)_2(\text{aq})$   
**Ionic Equation:**  $2 \text{Ag}^{+}(\text{aq}) + 2 \text{NO}_3^{-}(\text{aq}) + \text{Mg}^{2+}(\text{aq}) + 2 \text{I}^{-}(\text{aq}) \rightarrow 2 \text{AgI}(\text{s}) + \text{Mg}^{2+}(\text{aq}) + 2 \text{NO}_3^{-}(\text{aq})$   
**NIE:**  $2 \text{Ag}^{+}(\text{aq}) + 2 \text{I}^{-}(\text{aq}) \rightarrow 2 \text{AgI}(\text{s})$  (your final answer would be:  **$\text{Ag}^{+}(\text{aq}) + \text{I}^{-}(\text{aq}) \rightarrow \text{AgI}(\text{s})$** )
12. **Molecular Equation:**  $3 (\text{NH}_4)_2\text{CrO}_4(\text{aq}) + 2 \text{Al}(\text{ClO}_4)_3(\text{aq}) \rightarrow \text{Al}_2(\text{CrO}_4)_3(\text{s}) + 6 \text{NH}_4\text{ClO}_4(\text{aq})$   
**Ionic Equation:**  $6 \text{NH}_4^{+}(\text{aq}) + 3 \text{CrO}_4^{2-}(\text{aq}) + 2 \text{Al}^{3+}(\text{aq}) + 6 \text{ClO}_4^{-}(\text{aq}) \rightarrow 6 \text{NH}_4^{+}(\text{aq}) + 6 \text{ClO}_4^{-}(\text{aq}) + \text{Al}_2(\text{CrO}_4)_3(\text{s})$   
**NIE:**  $3 \text{CrO}_4^{2-}(\text{aq}) + 2 \text{Al}^{3+}(\text{aq}) \rightarrow \text{Al}_2(\text{CrO}_4)_3(\text{s})$
13. **Molecular Equation:**  $\text{Ni}(\text{NO}_3)_2(\text{aq}) + 2 \text{NaOH}(\text{aq}) \rightarrow \text{Ni}(\text{OH})_2(\text{s}) + 2 \text{NaNO}_3(\text{aq})$   
**Ionic Equation:**  $\text{Ni}^{2+}(\text{aq}) + 2 \text{NO}_3^{-}(\text{aq}) + 2 \text{Na}^{+}(\text{aq}) + 2 \text{OH}^{-}(\text{aq}) \rightarrow \text{Ni}(\text{OH})_2(\text{s}) + 2 \text{Na}^{+}(\text{aq}) + 2 \text{NO}_3^{-}(\text{aq})$   
**NIE:**  $\text{Ni}^{2+}(\text{aq}) + 2 \text{OH}^{-}(\text{aq}) \rightarrow \text{Ni}(\text{OH})_2(\text{s})$
14. **Molecular Equation:**  $2 \text{HBr}(\text{aq}) + \text{Pb}(\text{ClO}_4)_2(\text{aq}) \rightarrow 2 \text{HClO}_4(\text{aq}) + \text{PbBr}_2(\text{s})$   
**Ionic Equation:**  $2 \text{H}^{+}(\text{aq}) + 2 \text{Br}^{-}(\text{aq}) + \text{Pb}^{2+}(\text{aq}) + 2 \text{ClO}_4^{-}(\text{aq}) \rightarrow 2 \text{H}^{+}(\text{aq}) + 2 \text{ClO}_4^{-}(\text{aq}) + \text{PbBr}_2(\text{s})$   
**NIE:**  $2 \text{Br}^{-}(\text{aq}) + \text{Pb}^{2+}(\text{aq}) \rightarrow \text{PbBr}_2(\text{s})$
15. **Molecular Equation:**  $2 \text{KF}(\text{aq}) + \text{Mg}(\text{NO}_3)_2(\text{aq}) \rightarrow 2 \text{KNO}_3(\text{aq}) + \text{MgF}_2(\text{s})$   
**Ionic Equation:**  $2 \text{K}^{+}(\text{aq}) + 2 \text{F}^{-}(\text{aq}) + \text{Mg}^{2+}(\text{aq}) + 2 \text{NO}_3^{-}(\text{aq}) \rightarrow 2 \text{K}^{+}(\text{aq}) + 2 \text{NO}_3^{-}(\text{aq}) + \text{MgF}_2(\text{s})$   
**NIE:**  $2 \text{F}^{-}(\text{aq}) + \text{Mg}^{2+}(\text{aq}) \rightarrow \text{MgF}_2(\text{s})$
16. **Molecular Equation:**  $2 \text{Na}_3\text{PO}_4(\text{aq}) + 3 \text{Ni}(\text{ClO}_4)_2(\text{aq}) \rightarrow 6 \text{NaClO}_4(\text{aq}) + \text{Ni}_3(\text{PO}_4)_2(\text{s})$   
**Ionic Equation:**  $6 \text{Na}^{+}(\text{aq}) + 2 \text{PO}_4^{3-}(\text{aq}) + 3 \text{Ni}^{2+}(\text{aq}) + 6 \text{ClO}_4^{-}(\text{aq}) \rightarrow 6 \text{Na}^{+}(\text{aq}) + 6 \text{ClO}_4^{-}(\text{aq}) + \text{Ni}_3(\text{PO}_4)_2(\text{s})$   
**NIE:**  $2 \text{PO}_4^{3-}(\text{aq}) + 3 \text{Ni}^{2+}(\text{aq}) \rightarrow \text{Ni}_3(\text{PO}_4)_2(\text{s})$
17. **Molecular Equation:**  $\text{CuCl}_2(\text{aq}) + 2 \text{AgC}_2\text{H}_3\text{O}_2(\text{aq}) \rightarrow \text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2(\text{aq}) + 2 \text{AgCl}(\text{s})$   
**Ionic Equation:**  $\text{Cu}^{2+}(\text{aq}) + 2 \text{Cl}^{-}(\text{aq}) + 2 \text{Ag}^{+}(\text{aq}) + 2 \text{C}_2\text{H}_3\text{O}_2^{-}(\text{aq}) \rightarrow \text{Cu}^{2+}(\text{aq}) + 2 \text{C}_2\text{H}_3\text{O}_2^{-}(\text{aq}) + 2 \text{AgCl}(\text{s})$   
**NIE:**  $\text{Cl}^{-}(\text{aq}) + \text{Ag}^{+}(\text{aq}) \rightarrow \text{AgCl}(\text{s})$