

Name: **KEY**

UNDERSTANDING SOLUTIONS ASSIGNMENT

- Write balanced dissociation equations for the following electrolytes. Show the physical states of all species involved.

Chemical name	Dissociation equation
Sodium chloride	$\text{NaCl}_{(s)} \rightarrow \text{Na}^+_{(aq)} + \text{Cl}^-_{(aq)}$
Zinc phosphate	$\text{Zn}_3(\text{PO}_4)_{2(s)} \rightarrow \text{No Equation}$
Hydrochloric acid	$\text{HCl}_{(aq)} \rightarrow \text{H}^+_{(aq)} + \text{Cl}^-_{(aq)}$
Methanol	$\text{CH}_3\text{OH}_{(l)} \rightarrow \text{No Equation}$
Sodium hydroxide	$\text{NaOH}_{(s)} \rightarrow \text{Na}^+_{(aq)} + \text{OH}^-_{(aq)}$
Ammonium acetate	$\text{NH}_4\text{CH}_3\text{COO}_{(s)} \rightarrow \text{NH}_4^+_{(aq)} + \text{CH}_3\text{COO}^-_{(aq)}$
Potassium hydroxide	$\text{KOH}_{(s)} \rightarrow \text{K}^+_{(aq)} + \text{OH}^-_{(aq)}$
Sulfuric acid	$\text{H}_2\text{SO}_{4(aq)} \rightarrow 2\text{H}^+_{(aq)} + \text{SO}_4^{2-}_{(aq)}$
Potassium dichromate	$\text{K}_2\text{Cr}_2\text{O}_{7(s)} \rightarrow 2\text{K}^+_{(aq)} + \text{Cr}_2\text{O}_7^{2-}_{(aq)}$
Nitrous acid	$\text{HNO}_{2(aq)} \rightarrow \text{H}^+_{(aq)} + \text{NO}_2^-_{(aq)}$
Copper (II) sulfate	$\text{CuSO}_{4(s)} \rightarrow \text{Cu}^{2+}_{(aq)} + \text{SO}_4^{2-}_{(aq)}$
Elemental sulfur	$\text{S}_{8(s)} \rightarrow \text{No Equation}$
Hydrogen carbonate	$\text{H}_2\text{CO}_{3(aq)} \rightarrow 2\text{H}^+_{(aq)} + \text{CO}_3^{2-}_{(aq)}$

2. Each of the following pure substances is placed in water. For each mixture, list the major entities present.

Chemical Names	Formula	Major Entities
Ammonia	$\text{NH}_3(\text{g})$	$\text{H}_2\text{O}(\text{l})$, $\text{NH}_3(\text{aq})$
Silver nitrate	$\text{AgNO}_3(\text{s})$	$\text{H}_2\text{O}(\text{l})$, $\text{Ag}^+(\text{aq})$, $\text{NO}_3^-(\text{aq})$
Hydrogen chloride	$\text{HCl}(\text{aq})$	$\text{H}_2\text{O}(\text{l})$, $\text{H}^+(\text{aq})$, $\text{Cl}^-(\text{aq})$
Sodium tetraborate	$\text{Na}_2\text{B}_4\text{O}_7(\text{s})$	$\text{H}_2\text{O}(\text{l})$, $\text{Na}^+(\text{aq})$, $\text{B}_4\text{O}_7^{2-}(\text{aq})$
Barium hydroxide	$\text{Ba}(\text{OH})_2(\text{s})$	$\text{H}_2\text{O}(\text{l})$, $\text{Ba}^{2+}(\text{aq})$, $\text{OH}^-(\text{aq})$
Aluminum	$\text{Al}(\text{s})$	$\text{H}_2\text{O}(\text{l})$, $\text{Al}(\text{s})$
Magnesium phosphate	$\text{Mg}_3(\text{PO}_4)_2(\text{s})$	$\text{H}_2\text{O}(\text{l})$, $\text{Mg}_3(\text{PO}_4)_2(\text{s})$
Sulfurous acid	$\text{H}_2\text{SO}_3(\text{aq})$	$\text{H}_2\text{O}(\text{l})$, $\text{H}_2\text{SO}_3(\text{aq})$
Propane	$\text{C}_3\text{H}_8(\text{g})$	$\text{H}_2\text{O}(\text{l})$, $\text{C}_3\text{H}_8(\text{g})$
Chromium (III) hydroxide	$\text{Cr}(\text{OH})_3(\text{s})$	$\text{H}_2\text{O}(\text{l})$, $\text{Cr}(\text{OH})_3(\text{s})$
Benzoic acid	$\text{C}_6\text{H}_5\text{COOH}(\text{aq})$	$\text{H}_2\text{O}(\text{l})$, $\text{C}_6\text{H}_5\text{COOH}(\text{aq})$