## Ionic & Covalent Compounds Worksheet

Write formulas for the following compounds and classify as ionic (I) or covalent (C):

| | | I or C |
|---|---|---|
| lithium chloride | | |
| ammonium permanganate | | |
| silver nitrate | | |
| zinc hydroxide | | |
| carbon disulfide | | |
| iron(III) phosphate | | |
| copper(I) iodide | | |
| tin(IV) fluoride | | |
| barium dichromate | | |
| beryllium nitrite | | |
| sulfur trioxide | | |
| calcium bromide | | |
| lead(IV) carbonate | | |
| carbon tetrafluoride | | |
| strontium sulfide | | |
| aluminum acetate | | |
| sodium bicarbonate | | |
| tin(II) iodide | | |
| boron trichloride | | |
| dibromine pentoxide | | |
| ammonia | | |
| silicon dioxide | | |
| tetrasulfur tetranitride | | |
| magnesium phosphide | | |
| copper(I) bisulfite | | |

Write names for the following compounds and classify as ionic (I) or covalent (C):

| | | |
|---|---|---|
| $NaClO_4$ | | I or C |
| $P_2O_3$ | | |
| $Li_3P$ | | |
| $KHSO_4$ | | |
| $FeS$ | | |
| $PbCrO_4$ | | |
| $MgBr_2$ | | |
| $ZnSO_4$ | | |
| $K_2CO_3$ | | |
| $Cl_2S_5$ | | |
| $H_2O$ | | |
| $Al_2O_3$ | | |
| $NF_3$ | | |
| $CO_2$ | | |
| $NH_4NO_2$ | | |
| $Cu(NO_3)_2$ | | |
| $Ca_3N_2$ | | |
| $AlPO_4$ | | |
| $Na_2SO_3$ | | |
| $CCl_4$ | | |
| $KCN$ | | |
| $HCl$ | | strong acid⇒I |
| $CH_4$ | | |
| $Ba(OH)_2$ | | |
| $H_2S$ | | |
| $LiC_2H_3O_2$ | | |

# Naming Acids
## Chem Worksheet 9-3

Name _____

**Acids** are compounds that can donate the hydrogen ion, $H^+$. When the formula for an acid is written the symbol for this hydrogen generally appears at the beginning of the formula. For example the formula for hydrochloric acid is written HCl and the formula for phosphoric acid is $H_3PO_4$. Notice that both formulas begin with the letter H. In both cases the acid is made of a hydrogen ion (or hydrogen ions) and a negative ion, known as the **anion**.

The name for an acid is based on the name of the anion. If the anion ends with the letters –ide, the acid is named one way while acids containing anions that end with –ate use a different rule. Remember that monatomic anions typically end with –ide. The rules for naming acids are summarized below.

### *Naming Acids*

| **Anion called (root) ide**<br>*Example: sulfide, $S^{2-}$*<br>↓<br>**Acid called hydro (root) ic acid**<br>*Example: hydrosulfuric acid, $H_2S$* | **Anion called (root) ate**<br>*Example: chlorate , $ClO_3^-$*<br>↓<br>**Acid called (root) ic acid**<br>*Example: chloric acid, $HClO_3$* | **Anion called (root) ite**<br>*Example: chlorite , $ClO_2^-$*<br>↓<br>**Acid called (root) ous acid**<br>*Example: chlorous acid, $HClO_2$* |
|---|---|---|

**Examples**

#1. Write the chemical formula for: sulfurous acid.

- this acid contains the hydrogen ion and the sulfite ion: $H^+$ $SO_3^{2-}$
- create a neutral compound from these ions: $H^{1+}$ ~~$SO_3^{2-}$~~ $H_2SO_3$

#2. Name the following acid: $H_2CO_3$.

- this acid contains the hydrogen ion and the carbonate ion: $H^+$ $CO_3^{2-}$
- the name of the negative ion is **carbonate**, therefore the acid is called **carbonic acid.**

**Fill in the following table with the missing information.**

| | Formula | Cation | Formula for anion | Name of anion | Name of Acid |
|---|---|---|---|---|---|
| 1. | HCl | $H^+$ | $Cl^-$ | chloride | |
| 2. | $HNO_3$ | $H^+$ | | nitrate | |
| 3. | | $H^+$ | $F^-$ | | hydrofluoric acid |
| 4. | $H_2SO_4$ | $H^+$ | $SO_4^{2-}$ | | |
| 5. | | $H^+$ | | carbonate | |
| 6. | $H_2SO_3$ | | | sulfite | |
| 7. | | | $ClO_3^-$ | | chloric acid |
| 8. | | $H^+$ | | phosphate | |
| 9. | $H_2C_2O_4$ | | | oxalate | |
| 10. | | | | | hydrocyanic acid |
| 11. | | | | | acetic acid |
| 12. | | | $I^-$ | | |
| 13. | | | | sulfide | |
| 14. | HClO | | | | |
| 15. | | | $AsO_4^{3-}$ | arsenate | |
| 16. | | | | | nitrous acid |