

## Nomenclature #1: Binary Ionic Compounds

1. Write the chemical formulas for the following binary ionic compounds:

barium oxide	BaO	lithium sulfide	Li <sub>2</sub> S
magnesium bromide	MgBr <sub>2</sub>	strontium iodide	SrI <sub>2</sub>
calcium sulfide	CaS	hydrogen bromide	HBr
lithium oxide	Li <sub>2</sub> O	potassium chloride	KCl
cadmium fluoride	CdF <sub>2</sub>	silver sulfide	Ag <sub>2</sub> S
potassium phosphide	K <sub>3</sub> P	zinc carbide	Zn <sub>2</sub> C
manganese (IV) sulfide	MnS <sub>2</sub>	cobalt (II) bromide	CoBr <sub>2</sub>
manganese (II) carbide	Mn <sub>2</sub> C	phosphorus (V) nitride	P <sub>3</sub> N <sub>5</sub>
gold (I) iodide	AuI	nickel (III) phosphide	NiP
iron (II) bromide	FeBr <sub>2</sub>	copper (II) sulfide	CuS
aluminum sulfide	Al <sub>2</sub> S <sub>3</sub>	silicon iodide	SiI <sub>4</sub>
lead (IV) carbide	PbC	aluminum fluoride	AlF <sub>3</sub>
arsenic (V) nitride	As <sub>3</sub> N <sub>5</sub>	mercury (I) phosphide	Hg <sub>3</sub> P
cobalt (III) phosphide	CoP	cesium nitride	Cs <sub>3</sub> N
magnesium oxide	MgO	phosphorus (III) chloride	PCl <sub>3</sub>

2. Name the following binary compounds. Use the "Stock" system where necessary:

Li <sub>4</sub> C	lithium carbide	Ba <sub>3</sub> N <sub>2</sub>	barium nitride
MgBr <sub>2</sub>	magnesium bromide	Al <sub>2</sub> O <sub>3</sub>	aluminum oxide
CaCl <sub>2</sub>	calcium chloride	NaF	sodium fluoride
BaO	barium oxide	ZnBr <sub>2</sub>	zinc bromide
Ag <sub>3</sub> N	silver nitride	KI	potassium iodide
SrS	strontium sulfide	Cd <sub>3</sub> P <sub>2</sub>	cadmium phosphide
BiH <sub>5</sub>	bismuth (V) hydride	AgCl	silver chloride
AuBr <sub>3</sub>	gold (III) bromide	CoO	cobalt (II) oxide
Mn <sub>3</sub> N <sub>4</sub>	manganese (IV) nitride	MnS <sub>2</sub>	manganese (IV) sulfide
FeF <sub>2</sub>	iron (II) fluoride	Pb <sub>2</sub> C	lead (II) carbide
NiCl <sub>2</sub>	nickel (II) chloride	Sr <sub>3</sub> P <sub>2</sub>	strontium phosphide
HgO	mercury (II) oxide	CuF	copper (I) fluoride
CoBr <sub>3</sub>	cobalt (III) bromide	NiBr <sub>3</sub>	nickel (III) bromide
CrS	chromium (II) sulfide	FeN	iron (III) nitride
NiN	nickel (III) nitride	SiO <sub>2</sub>	silicon oxide
SnO <sub>2</sub>	tin (IV) oxide	Sb <sub>2</sub> S <sub>5</sub>	antimony (V) sulfide
Au <sub>3</sub> P	gold (I) phosphide	AsH <sub>3</sub>	arsenic (III) hydride

## Nomenclature #2: Polyatomic Ionic Compounds

1. Name the following compounds (include Roman Numerals when necessary):

$\text{Na}_2\text{SO}_4$	sodium sulfate	$\text{AlPO}_4$	aluminum phosphate
$\text{Al}(\text{ClO}_4)_3$	aluminum perchlorate	$\text{AsPO}_3$	arsenic (III) phosphite
$\text{Ni}(\text{OH})_3$	nickel (III) hydroxide	$\text{AgBrO}_3$	silver bromate
$\text{Pb}(\text{IO}_3)_2$	lead (II) iodate	$\text{K}_3\text{P}$	potassium phosphide
$\text{HgCN}$	mercury (I) cyanide	$\text{Mg}(\text{IO}_4)_2$	magnesium periodate
$\text{Cd}(\text{BrO})_2$	cadmium hypobromite	$\text{Au}_2\text{S}_2\text{O}_3$	gold (I) thiosulfate
$\text{KSCN}$	potassium thiocyanate	$\text{Bi}(\text{IO}_2)_3$	bismuth (III) iodite
$\text{Co}(\text{BrO}_4)_3$	cobalt (III) perbromate	$\text{Si}(\text{NO}_3)_4$	silicon nitrate
$\text{CuCH}_3\text{COO}$	copper (I) acetate	$\text{NH}_4\text{ClO}_3$	ammonium chlorate
$\text{P}(\text{BrO}_2)_3$	phosphorus (III) bromite	$\text{NiBO}_3$	nickel (III) borate
$\text{Fe}(\text{MnO}_4)_2$	iron (II) permanganate	$\text{SnCrO}_4$	tin (II) chromate
$\text{Cr}_2(\text{Cr}_2\text{O}_7)_3$	chromium (III) dichromate	$\text{Ba}(\text{ClO})_2$	barium hypochlorite
$\text{Pb}(\text{ClO}_2)_4$	lead (IV) chlorite	$\text{Pb}(\text{SO}_3)_2$	lead (IV) sulfite

2. Write the chemical formula for the following ionic compounds:

zinc carbonate	$\text{ZnCO}_3$	aluminum hypochlorite	$\text{Al}(\text{ClO})_3$
calcium phosphate	$\text{Ca}_3(\text{PO}_4)_2$	cadmium phosphate	$\text{Cd}_3(\text{PO}_4)_2$
iron (III) sulfate	$\text{Fe}_2(\text{SO}_4)_3$	mercury (II) chlorite	$\text{Hg}(\text{ClO}_2)_2$
potassium phosphite	$\text{K}_3\text{PO}_3$	magnesium hydroxide	$\text{Mg}(\text{OH})_2$
iron (II) chlorate	$\text{Fe}(\text{ClO}_3)_2$	cobalt (II) carbonate	$\text{CoCO}_3$
tin (IV) nitrite	$\text{Sn}(\text{NO}_2)_4$	lithium thiocyanate	$\text{LiSCN}$
lead (IV) dichromate	$\text{Pb}(\text{Cr}_2\text{O}_7)_2$	silver sulfite	$\text{Ag}_2\text{SO}_3$
ammonium sulfite	$(\text{NH}_4)_2\text{SO}_3$	arsenic (III) perbromate	$\text{As}(\text{BrO}_4)_3$
nickel (III) acetate	$\text{Ni}(\text{CH}_3\text{COO})_3$	nickel (II) chromate	$\text{NiCrO}_4$
antimony (V) cyanide	$\text{Sb}(\text{CN})_5$	iron (II) carbide	$\text{Fe}_2\text{C}$
mercury (I) permanganate	$\text{HgMnO}_4$	gold (III) hypoiodite	$\text{Au}(\text{IO})_3$
zinc chloride	$\text{ZnCl}_2$	copper (II) oxalate	$\text{CuC}_2\text{O}_4$
manganese (II) thiosulfate	$\text{MnS}_2\text{O}_3$	chromium (III) phosphide	$\text{CrP}$

### Nomenclature #3: Practice Naming Binary and Oxy-acids

#### The Rules:

- if the name of the ion ends in “ide”, name the acid: **hydro\_\_\_\_\_ic acid**
- if the name of the ion ends in “ate”, change the “ate” suffix to: **ic acid**
- if the name of the ion ends in “ite”, change the “ite” suffix to: **ous acid**

Name of Ion	Formula of Ion	Formula of Acid	Suffix on the Name of the Ion	Name of Acid
acetate	$\text{CH}_3\text{COO}^{1-}$	$\text{HCH}_3\text{COO}$	ate	acetic acid
borate	$\text{BO}_3^{3-}$	$\text{H}_3\text{BO}_3$	ate	boric acid
bromate	$\text{BrO}_3^{1-}$	$\text{HBrO}_3$	ate	bromic acid
bromide	$\text{Br}^{1-}$	$\text{HBr}$	ide	hydrobromic acid
bromite	$\text{BrO}_2^{1-}$	$\text{HBrO}_2$	ite	bromous acid
carbonate	$\text{CO}_3^{2-}$	$\text{H}_2\text{CO}_3$	ate	carbonic acid
chlorate	$\text{ClO}_3^{1-}$	$\text{HClO}_3$	ate	chloric acid
chloride	$\text{Cl}^{1-}$	$\text{HCl}$	ide	hydrochloric acid
chlorite	$\text{ClO}_2^{1-}$	$\text{HClO}_2$	ite	chlorous acid
chromate	$\text{CrO}_4^{2-}$	$\text{H}_2\text{CrO}_4$	ate	chromic acid
cyanide	$\text{CN}^{1-}$	$\text{HCN}$	ide	hydrocyanic acid
dichromate	$\text{Cr}_2\text{O}_7^{2-}$	$\text{H}_2\text{Cr}_2\text{O}_7$	ate	dichromic acid
fluoride	$\text{F}^{1-}$	$\text{HF}$	ide	hydrofluoric acid
hypobromite	$\text{BrO}^{1-}$	$\text{HBrO}$	ite	hypobromous acid
hypochlorite	$\text{ClO}^{1-}$	$\text{HClO}$	ite	hypochlorous acid
hypoiodite	$\text{IO}^{1-}$	$\text{HIO}$	ite	hypoiodous acid
iodide	$\text{I}^{1-}$	$\text{HI}$	ide	hydroiodic acid
iodate	$\text{IO}_3^{1-}$	$\text{HIO}_3$	ate	iodic acid
oxalate	$\text{C}_2\text{O}_4^{2-}$	$\text{H}_2\text{C}_2\text{O}_4$	ate	oxalic acid
perbromate	$\text{BrO}_4^{1-}$	$\text{HBrO}_4$	ate	perbromic acid
perchlorate	$\text{ClO}_4^{1-}$	$\text{HClO}_4$	ate	perchloric acid
periodate	$\text{IO}_4^{1-}$	$\text{HIO}_4$	ate	periodic acid
permanganate	$\text{MnO}_4^{1-}$	$\text{HMnO}_4$	ate	permanganic acid
phosphate	$\text{PO}_4^{3-}$	$\text{H}_3\text{PO}_4$	ate	phosphoric acid
phosphide	$\text{P}^{3-}$	$\text{H}_3\text{P}$	ide	hydrophosphoric acid
phosphite	$\text{PO}_3^{3-}$	$\text{H}_3\text{PO}_3$	ite	phosphorous acid
sulfate	$\text{SO}_4^{3-}$	$\text{H}_2\text{SO}_4$	ate	sulfuric acid
sulfide	$\text{S}^{2-}$	$\text{H}_2\text{S}$	ide	hydrosulfuric acid
sulfite	$\text{SO}_3^{2-}$	$\text{H}_2\text{SO}_3$	ite	sulfurous acid
thiocyanate	$\text{SCN}^{1-}$	$\text{HSCN}$	ate	thiocyanic acid
thiosulfate	$\text{S}_2\text{O}_3^{2-}$	$\text{H}_2\text{S}_2\text{O}_3$	ate	thiosulfuric acid

### Nomenclature #3: Naming Acids

1. Name the following binary acids. These acids contain only hydrogen and one other element. Their names are always “hydro\_\_\_\_\_ic acid”. (“Hydro” tells you it is a binary acid)

HI	hydroiodic acid	HF	hydrofluoric acid
H <sub>3</sub> P	hydrophosphoric acid	HBr	hydrobromic acid
HCl	hydrochloric acid	H <sub>2</sub> S	hydrosulfuric acid

2. Name these oxyacids. If the acid contains the “ate” ion, then it becomes the “ic” acid. The “ite” ion, becomes the “ous” acid. Do not use “hydro” in these names. Hydro is only for binary acids.

HNO <sub>3</sub>	nitric acid	HIO	hypoiodous acid
H <sub>3</sub> PO <sub>4</sub>	phosphoric acid	H <sub>2</sub> CO <sub>3</sub>	carbonic acid
HClO <sub>2</sub>	chlorous acid	HCH <sub>3</sub> COO	acetic acid
HBrO <sub>4</sub>	perbromic acid	H <sub>2</sub> SO <sub>3</sub>	sulfurous acid
HNO <sub>2</sub>	nitrous acid	H <sub>3</sub> PO <sub>3</sub>	phosphorous acid (check your spelling)

3. Write the chemical formulas for these acids. Remember, “hydro” means it is a binary acid (no oxygen)

nitric acid	HNO <sub>3</sub>	hydrobromic acid	HBr
nitrous acid	HNO <sub>2</sub>	hypobromous acid	HBrO
phosphoric acid	H <sub>3</sub> PO <sub>4</sub>	bromous acid	HBrO <sub>2</sub>
phosphorous acid	H <sub>3</sub> PO <sub>3</sub>	bromic acid	HBrO <sub>3</sub>
hydrophosphoric acid	H <sub>3</sub> P	perbromic acid	HBrO <sub>4</sub>
sulfuric acid	H <sub>2</sub> SO <sub>4</sub>	perchloric acid	HClO <sub>4</sub>
sulfurous acid	H <sub>2</sub> SO <sub>3</sub>	chloric acid	HClO <sub>3</sub>
hydrosulfuric acid	H <sub>2</sub> S	chlorous acid	HClO <sub>2</sub>
carbonic acid	H <sub>2</sub> CO <sub>3</sub>	hypochlorous acid	HClO
hydroiodic acid	HI	hydrochloric acid	HCl
hypoiodous acid	HIO	acetic acid	HCH <sub>3</sub> COO
iodous acid	HIO <sub>2</sub>	hydrofluoric acid	HF
iodic acid	HIO <sub>3</sub>	oxalic acid	H <sub>2</sub> C <sub>2</sub> O <sub>4</sub>
periodic acid	HIO <sub>4</sub>	chromic acid	H <sub>2</sub> CrO <sub>4</sub>

4. Name the following acids. You may have to use the naming rules to figure some of them out.

HBr	hydrobromic acid	H <sub>3</sub> BO <sub>3</sub>	boric acid
H <sub>2</sub> SO <sub>3</sub>	sulfurous acid	HIO	hypoiodous acid
HNO <sub>3</sub>	nitric acid	H <sub>2</sub> CO <sub>3</sub>	carbonic acid
H <sub>2</sub> S	hydrosulfuric acid	HClO <sub>4</sub>	perchloric acid
H <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	dichromic acid	HF	hydrofluoric acid
H <sub>2</sub> SO <sub>4</sub>	sulfuric acid	HCH <sub>3</sub> COO	acetic acid
HCl	hydrochloric acid	H <sub>3</sub> BO <sub>2</sub>	borous acid

## Nomenclature #4: Acids and Review

1. Name the following compounds. If they begin with hydrogen, name them as acids.

$\text{Sb}(\text{NO}_2)_3$	antimony (III) nitrite	$\text{HIO}$	hypoiodous acid
$(\text{NH}_4)_2\text{CO}_3$	ammonium carbonate	$\text{LiClO}_4$	lithium perchlorate
$\text{HClO}_2$	chlorous acid	$\text{HCH}_3\text{COO}$	acetic acid
$\text{Au}_3\text{PO}_3$	gold (I) phosphite	$\text{Cu}_3\text{BO}_3$	copper (I) borate
$\text{HNO}_2$	nitrous acid	$\text{H}_3\text{PO}_3$	phosphorous acid
$\text{MnO}_2$	manganese (IV) oxide	$\text{Fe}(\text{OH})_3$	iron (III) hydroxide
$\text{H}_2\text{SO}_3$	sulfurous acid	$\text{Hg}_2\text{C}_2\text{O}_4$	mercury (I) oxalate
$\text{HIO}_2$	iodous acid	$\text{H}_2\text{CO}_3$	carbonic acid
$\text{H}_2\text{S}$	hydrosulfuric acid	$\text{HClO}_4$	perchloric acid
$\text{H}_3\text{PO}_4$	phosphoric acid	$\text{HCN}$	hydrocyanic acid
$\text{H}_3\text{P}$	hydrophosphoric acid	$\text{Co}_2(\text{Cr}_2\text{O}_7)_3$	cobalt (III) dichromate
$\text{HCl}$	hydrochloric acid	$\text{HBrO}_2$	bromous acid
$\text{Mg}_3\text{N}_2$	magnesium nitride	$\text{Sn}(\text{S}_2\text{O}_3)_2$	tin (IV) thiosulfate
$\text{HIO}_4$	periodic acid	$\text{P}(\text{SCN})_3$	phosphorus (III) thiocyanate
$\text{H}_3\text{BO}_3$	boric acid	$\text{HF}$	hydrofluoric acid

2. Write the chemical formulas for the following compounds. Remember, "hydro" means a binary acid.

nitric acid	$\text{HNO}_3$	hydrochloric acid	$\text{HCl}$
gold (III) thiocyanate	$\text{Au}(\text{SCN})_3$	chromic acid	$\text{H}_2\text{CrO}_4$
bromic acid	$\text{HBrO}_3$	potassium dichromate	$\text{K}_2\text{Cr}_2\text{O}_7$
phosphorous acid	$\text{H}_3\text{PO}_3$	cadmium borate	$\text{Cd}_3(\text{BO}_3)_2$
ammonium hydroxide	$\text{NH}_4\text{OH}$	perbromic acid	$\text{HBrO}_4$
chromium (III) chlorate	$\text{Cr}(\text{ClO}_3)_3$	bismuth (V) phosphide	$\text{Bi}_3\text{P}_5$
nickel (II) iodite	$\text{Ni}(\text{IO}_2)_2$	hydrobromic acid	$\text{HBr}$
hydrosulfuric acid	$\text{H}_2\text{S}$	chlorous acid	$\text{HClO}_2$
carbonic acid	$\text{H}_2\text{CO}_3$	calcium hydroxide	$\text{Ca}(\text{OH})_2$
iron (II) fluoride	$\text{FeF}_2$	lead (IV) cyanide	$\text{Pb}(\text{CN})_4$
hypoiodous acid	$\text{HIO}$	acetic acid	$\text{HCH}_3\text{COO}$
arsenic (V) acetate	$\text{As}(\text{CH}_3\text{COO})_5$	zinc carbonate	$\text{ZnCO}_3$
lead (II) oxalate	$\text{PbC}_2\text{O}_4$	oxalic acid	$\text{H}_2\text{C}_2\text{O}_4$
periodic acid	$\text{HIO}_4$	antimony (III) thiosulfate	$\text{Sb}_2(\text{S}_2\text{O}_3)_3$
cesium carbide	$\text{Cs}_4\text{C}$	ammonium perbromate	$\text{NH}_4\text{BrO}_4$

## Nomenclature #5: Odds And Ends when Naming Ionic Compounds

1. Write correct formulae for each of the following names:

sodium hypochlorite (bleach)	$\text{NaClO}$	mercury (II) periodate	$\text{Hg}(\text{IO}_4)_2$
manganese (IV) oxide	$\text{MnO}_2$	tin (IV) bromate	$\text{Sn}(\text{BrO}_3)_4$
potassium peroxide	$\text{K}_2\text{O}_2$	zinc peroxide	$\text{ZnO}_2$
chromium (II) sulfate	$\text{CrSO}_4$	chromium (III) hydrogen sulfate	$\text{Cr}(\text{HSO}_4)_3$
iron (III) acetate	$\text{Fe}(\text{CH}_3\text{COO})_3$	silver peroxide	$\text{Ag}_2\text{O}_2$
tin (IV) iodite	$\text{Sn}(\text{IO}_2)_4$	lead (IV) hydrogen chromate	$\text{Pb}(\text{HCrO}_4)_4$
lithium peroxide	$\text{Li}_2\text{O}_2$	cobalt (II) perchlorate	$\text{Co}(\text{ClO}_4)_2$
arsenic (V) thiosulfate	$\text{As}_2(\text{S}_2\text{O}_3)_5$	gold (III) fluoride	$\text{AuF}_3$
calcium permanganate	$\text{Ca}(\text{MnO}_4)_2$	sodium peroxide	$\text{Na}_2\text{O}_2$
aluminum thiocyanate	$\text{Al}(\text{SCN})_3$	strontium cyanate	$\text{Sr}(\text{OCN})_2$
copper (II) hydrogen carbonate	$\text{Cu}(\text{HCO}_3)_2$	lead (IV) hypoiodite	$\text{Pb}(\text{IO})_4$
silver dichromate	$\text{Ag}_2\text{Cr}_2\text{O}_7$	iron (III) borate	$\text{FeBO}_3$
ammonium cyanide	$\text{NH}_4\text{CN}$	antimony (III) hydrogen sulfite	$\text{Sb}(\text{HSO}_3)_3$
mercury (II) acetate dihydrate	$\text{Hg}(\text{CH}_3\text{COO})_2 \cdot 2 \text{H}_2\text{O}$		
silver hydrogen chromate tetrahydrate	$\text{AgHCrO}_4 \cdot 4 \text{H}_2\text{O}$		
copper (II) sulfate pentahydrate	$\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$		
copper (I) carbonate heptahydrate	$\text{Cu}_2\text{CO}_3 \cdot 7 \text{H}_2\text{O}$		
iron (III) dihydrogen phosphite nonahydrate	$\text{Fe}(\text{H}_2\text{PO}_3)_3 \cdot 9 \text{H}_2\text{O}$		

2. For each of the following write correct names.

$\text{Na}_2\text{O}_2$	sodium peroxide	$\text{Hg}(\text{ClO}_4)_2$	mercury (II) perchlorate
$\text{KNO}_2$	potassium nitrite	$\text{Zn}(\text{OH})_2$	zinc hydroxide
$\text{CrSO}_4$	chromium (II) sulfate	$\text{Cr}(\text{HSO}_3)_3$	chromium (III) hydrogen sulfite
$\text{Fe}(\text{CH}_3\text{COO})_3$	iron (III) acetate	$\text{Li}_2\text{O}_2$	lithium peroxide
$\text{AuF}_3$	gold (III) fluoride	$\text{Ca}(\text{HCrO}_4)_2$	calcium hydrogen chromate
$\text{HgMnO}_4$	mercury (I) permanganate	$\text{NaOCN}$	sodium cyanate
$\text{Pb}(\text{IO})_2$	lead (II) hypoiodite	$\text{Sn}(\text{H}_2\text{PO}_4)_2$	tin (II) dihydrogen phosphate
$\text{CuHSO}_4$	copper (I) hydrogen sulfate	$\text{Al}_2(\text{Cr}_2\text{O}_7)_3$	aluminum dichromate
$\text{Ag}_2\text{HPO}_3$	silver hydrogen phosphite	$\text{H}_2\text{O}_2$	hydrogen peroxide
$\text{NiPO}_4$	nickel (III) phosphate	$\text{Pb}(\text{HCO}_3)_4$	lead (IV) hydrogen carbonate
$\text{Co}(\text{IO}_2)_2$	cobalt (II) iodite	$\text{Sb}_3(\text{BO}_3)_5$	antimony (V) borate
$\text{MnO}_2 \cdot 4 \text{H}_2\text{O}$	manganese (IV) oxide tetrahydrate		
$\text{CuNO}_3 \cdot 6 \text{H}_2\text{O}$	copper (I) nitrate hexahydrate		
$\text{NaCH}_3\text{COO} \cdot 3 \text{H}_2\text{O}$	sodium acetate trihydrate		
$\text{AuCN} \cdot 8 \text{H}_2\text{O}$	gold (I) cyanide octahydrate		

## Nomenclature #6: Binary Covalent Compounds

- Ionic compounds are formed when \_\_\_\_\_ atoms bond with \_\_\_\_\_ atoms. They are named using the rules for naming ionic compounds that we have been learning up until now.
- Covalent (molecular) compounds are formed when two or more \_\_\_\_\_ atoms are bonded together. There is separate IUPAC system of naming that is used for *binary* covalent compounds, called the prefix system. It uses the same prefixes that we used to name hydrated compounds.

In the prefix system, the number of atoms of each element in the compound is indicated with a prefix. Because these rules are for binary compounds, the ending of the second element is changed to “ide”. There are two additional rules:

1. If there is only one atom of the first element, then a prefix is not used for that element:  
 eg. CO<sub>2</sub> is \_\_\_\_\_  
 eg. NI<sub>3</sub> is \_\_\_\_\_
2. When the second element is oxygen and the prefix ends in an “o” or “a”, then the “o” or “a” is omitted:  
 eg. CO is \_\_\_\_\_  
 P<sub>2</sub>O<sub>5</sub> is \_\_\_\_\_  
 N<sub>2</sub>O is \_\_\_\_\_  
 N<sub>2</sub>O<sub>4</sub> is \_\_\_\_\_

Prefixes
mono means
di means
tri means
tetra means
penta means
hexa means
hepta means
octa means
nona means
deca means

1. Name the following covalent compounds using the prefix system:

SO <sub>2</sub>	sulfur dioxide	NF <sub>3</sub>	nitrogen trifluoride
CCl <sub>4</sub>	carbon tetrachloride	N <sub>2</sub> H <sub>2</sub>	dinitrogen dihydride
SO <sub>3</sub>	sulfur trioxide	P <sub>2</sub> H <sub>4</sub>	diphosphorus tetrahydride
PF <sub>5</sub>	phosphorus pentafluoride	XeF <sub>6</sub>	xenon hexafluoride (yes, it does exist)
SCl <sub>6</sub>	sulfur hexachloride	NCl <sub>3</sub>	nitrogen trichloride
N <sub>2</sub> S <sub>4</sub>	dinitrogen tetrasulfide	BI <sub>3</sub>	boron triiodide
PBr <sub>3</sub>	phosphorus tribromide	SF <sub>6</sub>	sulfur hexafluoride
H <sub>2</sub> O	dihydrogen monoxide	SiO <sub>2</sub>	silicon dioxide
NO <sub>2</sub>	nitrogen dioxide	CS <sub>2</sub>	carbon disulfide
OF <sub>2</sub>	oxygen difluoride	XeI <sub>4</sub>	xenon tetraiodide

2. Use the prefix system to write the chemical formulas for the following molecules:

dihydrogen monoxide	H <sub>2</sub> O	silicon dioxide	SiO <sub>2</sub>
dinitrogen trioxide	N <sub>2</sub> O <sub>3</sub>	carbon monoxide	CO
sulfur dioxide	SO <sub>2</sub>	sulfur tetrafluoride	SF <sub>4</sub>
boron triiodide	BI <sub>3</sub>	chlorine dioxide	ClO <sub>2</sub>
carbon tetrachloride	CCl <sub>4</sub>	phosphorus pentachloride	PCl <sub>5</sub>
iodine heptafluoride	IF <sub>7</sub>	xenon hexafluoride	XeF <sub>6</sub>
boron tribromide	BBr <sub>3</sub>	silicon tetraiodide	SiI <sub>4</sub>
diphosphorus pentasulfide	P <sub>2</sub> S <sub>5</sub>	disulfur dichloride	S <sub>2</sub> Cl <sub>2</sub>

## Nomenclature #7: Final Practice

### 1. Write the IUPAC formulas for each of the following compounds:

copper (II) hydroxide pentahydrate	$\text{Cu}(\text{OH})_2 \cdot 5\text{H}_2\text{O}$	cobalt (II) carbonate	$\text{CoCO}_3$
phosphorus trihydride	$\text{PH}_3$	nitrous acid	$\text{HNO}_2$
gold (III) nitrite trihydrate	$\text{Au}(\text{NO}_2)_3 \cdot 3\text{H}_2\text{O}$	tin (IV) thiosulfate	$\text{Sn}(\text{S}_2\text{O}_3)_2$
nitric acid	$\text{HNO}_3$	carbon monoxide	$\text{CO}$
phosphorus (V) chloride	$\text{PCl}_5$	lead (IV) dichromate	$\text{Pb}(\text{Cr}_2\text{O}_7)_2$
hydrosulfuric acid	$\text{H}_2\text{S}$	carbon disulfide	$\text{CS}_2$
mercury (I) hypobromite	$\text{HgBrO}$	nickel (II) fluoride	$\text{NiF}_2$
arsenic (III) oxide	$\text{As}_2\text{O}_3$	diphosphorus tetrafluoride	$\text{P}_2\text{F}_4$
liquid bromine	$\text{Br}_2$	bromic acid	$\text{HBrO}_3$
nickel (III) hypochlorite	$\text{Ni}(\text{ClO})_3$	antimony (V) iodite	$\text{Sb}(\text{IO}_2)_5$
sodium cyanide	$\text{NaCN}$	hydrophosphoric acid	$\text{H}_3\text{P}$
mercury (II) cyanate	$\text{Hg}(\text{OCN})_2$	silver peroxide	$\text{Ag}_2\text{O}_2$
chloric acid	$\text{HClO}_3$	tin (II) permanganate	$\text{Sn}(\text{MnO}_4)_2$
cesium fluoride	$\text{CsF}$	manganese (IV) hypobromite	$\text{Mn}(\text{BrO})_4$
arsenic (V) bromate	$\text{As}(\text{BrO}_3)_5$	arsenic (III) oxide	$\text{As}_2\text{O}_3$
silver thiocyanate	$\text{AgSCN}$	phosphorous acid	$\text{H}_3\text{PO}_3$
phosphoric acid	$\text{H}_3\text{PO}_4$	hydrofluoric acid	$\text{HF}$
gold (I) oxalate	$\text{Au}_2\text{C}_2\text{O}_4$	phosphorus tetrachloride	$\text{PCl}_4$
bismuth (III) iodite	$\text{Bi}(\text{IO}_2)_3$	potassium peroxide	$\text{K}_2\text{O}_2$
nitrogen gas	$\text{N}_2$	phosphorus (III) carbide	$\text{P}_4\text{C}_3$
antimony (V) hydroxide	$\text{Sb}(\text{OH})_5$	hypobromous acid	$\text{HBrO}$
cesium peroxide	$\text{Cs}_2\text{O}_2$	perchloric acid	$\text{HClO}_4$
iodous acid	$\text{HIO}_2$	iron (III) bromite	$\text{Fe}(\text{BrO}_2)_3$
lithium perchlorate	$\text{LiClO}_4$	carbonic acid	$\text{H}_2\text{CO}_3$
iron (III) acetate	$\text{Fe}(\text{CH}_3\text{COO})_3$	sodium bicarbonate	$\text{NaHCO}_3$
lead (IV) thiocyanate	$\text{Pb}(\text{SCN})_4$	hydroiodic acid	$\text{HI}$
periodic acid	$\text{HIO}_4$	bismuth (V) hydrogen phosphite	$\text{Bi}_2(\text{HPO}_3)_5$
dihydrogen monosulfide	$\text{H}_2\text{S}$	acetic acid	$\text{HCH}_3\text{COO}$
cobalt (III) bromite	$\text{Co}(\text{BrO}_2)_3$	lead (II) periodate	$\text{Pb}(\text{IO}_4)_2$
copper (I) carbonate heptahydrate	$\text{Cu}_2\text{CO}_3 \cdot 7 \text{H}_2\text{O}$		
tin (IV) dichromate monohydrate	$\text{Sn}(\text{Cr}_2\text{O}_7)_2 \cdot \text{H}_2\text{O}$		
iron (III) dihydrogen phosphite nonahydrate	$\text{Fe}(\text{H}_2\text{PO}_3)_3 \cdot 9 \text{H}_2\text{O}$		
bismuth (V) bromate octahydrate	$\text{Bi}(\text{BrO}_3)_5 \cdot 8 \text{H}_2\text{O}$		
lead (II) chromate tetrahydrate	$\text{PbCrO}_4 \cdot 4 \text{H}_2\text{O}$		



**2. Write correct names for each of the following using the IUPAC method:**

$\text{CoCO}_3$	cobalt (II) carbonate	$\text{Sn}(\text{CrO}_4)_2$	tin (IV) chromate
$\text{PCl}_3$	phosphorus trichloride	$\text{Pb}(\text{Cr}_2\text{O}_7)_2$	lead (IV) dichromate
$\text{Ni}_2(\text{Cr}_2\text{O}_7)_3$	nickel (III) dichromate	$\text{Sb}(\text{IO}_2)_3$	antimony (III) iodite
$\text{P}_2\text{O}_3$	diphosphorus trioxide	$\text{CS}_2$	carbon disulfide
$\text{HgSO}_3$	mercury (II) sulfite	$\text{Fe}(\text{IO}_4)_2$	iron (II) periodate
$\text{NH}_4\text{BrO}$	ammonium hypobromite	$\text{Li}_2\text{O}_2$	lithium peroxide
$\text{As}(\text{BrO}_3)_5$	arsenic (V) bromate	$\text{SnS}_2\text{O}_3$	tin (II) thiosulfate
$\text{AuClO}$	gold (I) hypochlorite	$\text{As}_2\text{O}_3$	arsenic (III) oxide
$\text{Bi}(\text{IO}_2)_3$	bismuth (III) iodite	$\text{H}_3\text{PO}_3$	phosphorous acid
$\text{HIO}_4$	periodic acid	$\text{Mn}(\text{OH})_4$	manganese (IV) hydroxide
$\text{CuHCO}_3$	copper (I) hydrogen carbonate	$\text{Na}_2\text{O}_2$	sodium peroxide
$\text{Co}(\text{BrO}_2)_3$	cobalt (III) bromite	$\text{Au}_3\text{BO}_3$	gold (I) borate
$\text{Ni}_3(\text{PO}_3)_2$	nickel (II) phosphite	$\text{HgBrO}_2$	mercury (I) bromite
$\text{HgBr}$	mercury (I) bromide	$\text{Ba}(\text{CH}_3\text{COO})_2$	barium acetate
$\text{HClO}$	hypochlorous acid	$\text{F}_2$	fluorine gas
$\text{KHSO}_4$	potassium hydrogen sulfate	$\text{Ca}_3\text{N}_2$	calcium nitride
$\text{Pb}_3(\text{PO}_3)_4$	lead (IV) phosphite	$\text{MgHPO}_3$	magnesium hydrogen phosphite
$\text{Zn}(\text{OH})_2$	zinc hydroxide	$\text{SO}_2$	sulfur dioxide
$\text{Fe}_2\text{S}_3 \cdot 3 \text{H}_2\text{O}$	iron (III) sulfide trihydrate	$\text{HBrO}_2$	bromous acid
$\text{NaH}$	sodium hydride	$\text{CCl}_4$	carbon tetrachloride
$\text{Ca}(\text{ClO})_2$	calcium hypochlorite	$\text{H}_2\text{O}$	dihydrogen monoxide (water)
$\text{H}_2\text{S}$	hydrosulfuric acid	$\text{N}_2$	nitrogen gas
$\text{H}_2\text{SO}_3$	sulfurous acid	$\text{Au}_2\text{C}_2\text{O}_4$	gold (I) oxalate
$\text{BaO}$	barium oxide	$\text{SnF}_4$	tin (IV) fluoride
$(\text{NH}_4)_3\text{P}$	ammonium phosphide	$\text{HI}$	hydroiodic acid
$\text{PbCrO}_4 \cdot 4 \text{H}_2\text{O}$	lead (II) chromate tetrahydrate	$\text{Bi}(\text{SCN})_3$	bismuth (III) thiocyanate
$\text{H}_2\text{SO}_4$	sulfuric acid	$\text{H}_2\text{O}_2$	hydrogen peroxide
$\text{H}_3\text{P}$	hydrophosphoric acid	$\text{N}_2\text{O}_4$	dinitrogen tetroxide
$\text{Ag}_2\text{O}_2$	silver peroxide	$\text{Si}(\text{OCN})_4$	silicon cyanate
$\text{HIO}$	hypoiodous acid	$\text{HCH}_3\text{COO}$	acetic acid
$\text{Cu}(\text{OH})_2 \cdot 5 \text{H}_2\text{O}$	copper (II) hydroxide pentahydrate		
$\text{Au}(\text{NO}_2)_3 \cdot 3 \text{H}_2\text{O}$	gold (III) nitrite trihydrate		
$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 6 \text{H}_2\text{O}$	sodium dichromate hexahydrate		
$\text{Fe}(\text{H}_2\text{PO}_3)_3 \cdot 9 \text{H}_2\text{O}$	iron (III) dihydrogen phosphite nonahydrate		
$\text{Al}_2(\text{HPO}_4)_3 \cdot 2 \text{H}_2\text{O}$	aluminum hydrogen phosphate dihydrate		
$\text{CuHCO}_3 \cdot 7 \text{H}_2\text{O}$	copper (I) hydrogen carbonate heptahydrate		