

## Naming Compounds Handout Key

### p. 2

Name each of the following monatomic cations:

$\text{Li}^+$  = lithium ion

$\text{Cd}^{+2}$  = cadmium ion

$\text{Ag}^+$  = silver ion

$\text{Cu}^{+2}$  = copper (II) ion

$\text{Al}^{+3}$  = aluminum ion

$\text{Mg}^{+2}$  = magnesium ion

$\text{Mn}^{+2}$  = manganese (II) ion

$\text{Sn}^{+4}$  = tin (IV) ion

$\text{H}^+$  = hydrogen ion

$\text{Co}^{+3}$  = cobalt (III) ion

$\text{Fe}^{+3}$  = iron (III) ion

$\text{Na}^+$  = sodium ion

$\text{K}^+$  = potassium ion

$\text{Ti}^{+4}$  = titanium (IV) ion

$\text{Ca}^{+2}$  = calcium ion

$\text{Ni}^{+2}$  = nickel (II) ion

### p. 3

Name each of the following monatomic anions:

$\text{F}^-$  = fluoride ion

$\text{Se}^{-2}$  = selenide ion

$\text{Br}^-$  = bromide ion

$\text{S}^{-2}$  = sulfide ion

$\text{I}^-$  = iodide ion

$\text{P}^{-3}$  = phosphide ion

$\text{Cl}^-$  = chloride ion

$\text{O}^{-2}$  = oxide ion

**p. 4**

Name each of the following polyatomic ions:

$\text{CN}^-$  = cyanide ion

$\text{CrO}_4^{-2}$  = chromate ion

$\text{SO}_4^{-2}$  = sulfate ion

$\text{NO}_3^-$  = nitrate ion

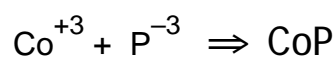
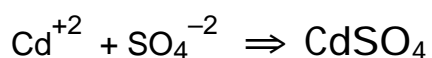
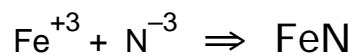
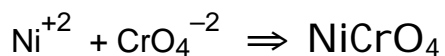
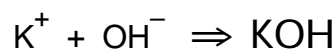
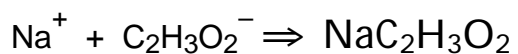
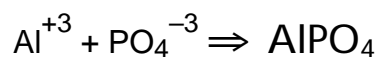
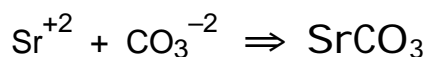
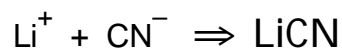
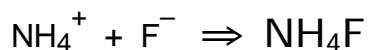
$\text{OH}^-$  = hydroxide ion

$\text{PO}_4^{-3}$  = phosphate ion

$\text{NH}_4^+$  = ammonium ion

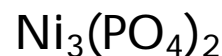
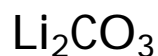
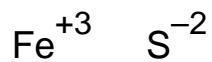
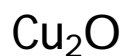
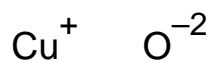
$\text{C}_2\text{H}_3\text{O}_2^-$  = acetate ion

Combine each pair of ions to get the formula of the compound they form:



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Combine each pair of ions to get the formula of the compound they form:



**p. 6**

Combine each pair of ions to get the chemical formula, then name the compound:

Individual ions	Compound Formula	Compound Name
$\text{Mg}^{+2}$ $\text{F}^{-}$	<u>      <math>\text{MgF}_2</math>      </u>	<u>      magnesium fluoride      </u>
$\text{Ni}^{+2}$ $\text{S}^{-2}$	$\text{NiS}$	nickel (II) sulfide
$\text{Ca}^{+2}$ $\text{Br}^{-}$	$\text{CaBr}_2$	calcium bromide
$\text{Al}^{+3}$ $\text{P}^{-3}$	$\text{AlP}$	aluminum phosphide
$\text{Co}^{+2}$ $\text{NO}_2^{-}$	$\text{Co}(\text{NO}_2)_2$	cobalt (II) nitrite
$\text{K}^{+}$ $\text{CrO}_4^{-2}$	$\text{K}_2\text{CrO}_4$	potassium chromate
$\text{Fe}^{+3}$ $\text{O}^{-2}$	$\text{Fe}_2\text{O}_3$	iron (III) oxide

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Give the name for each compound given its chemical formula:

Formula	Individual Ions	Name of Compound
MgCl <sub>2</sub>	Mg <sup>+2</sup> Cl <sup>-</sup>	magnesium chloride
LiOH	Li <sup>+</sup> OH <sup>-</sup>	lithium hydroxide
ZnCO <sub>3</sub>	Zn <sup>2+</sup> CO <sub>3</sub> <sup>2-</sup>	zinc carbonate
K <sub>2</sub> S	K <sup>+</sup> S <sup>2-</sup>	potassium sulfide
FePO <sub>4</sub>	Fe <sup>3+</sup> PO <sub>4</sub> <sup>3-</sup>	iron (III) phosphate
SnO <sub>2</sub>	Sn <sup>4+</sup> O <sup>2-</sup>	tin (IV) oxide
CuBr <sub>2</sub>	Cu <sup>2+</sup> Br <sup>-</sup>	copper (II) bromide
Ag <sub>3</sub> N	Ag <sup>+</sup> N <sup>3-</sup>	silver nitride
Mn(CN) <sub>2</sub>	Mn <sup>2+</sup> CN <sup>-</sup>	manganese (II) cyanide
AgC <sub>2</sub> H <sub>3</sub> O <sub>2</sub>	Ag <sup>+</sup> C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup>	silver acetate

**p. 9**

Give the name for each compound given its chemical formula:

Name of Compound	individual ions	Formula
lithium cyanide	$\text{Li}^+ \text{CN}^-$	$\text{LiCN}$
iron (III) sulfate	$\text{Fe}^{+3} \text{SO}_4^{-2}$	$\text{Fe}_2(\text{SO}_4)_3$
calcium iodide	$\text{Ca}^{+2} \text{I}^-$	$\text{CaI}_2$
tin (IV) dichromate	$\text{Sn}^{+4} \text{Cr}_2\text{O}_7^{-2}$	$\text{Sn}(\text{Cr}_2\text{O}_7)_2$
cadmium nitrite	$\text{Cd}^{+2} \text{NO}_2^-$	$\text{Cd}(\text{NO}_2)_2$
copper (II) acetate	$\text{Cu}^{+2} \text{C}_2\text{H}_3\text{O}_2^-$	$\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2$
zinc carbonate	$\text{Zn}^{+2} \text{CO}_3^{-2}$	$\text{ZnCO}_3$
lead (II) phosphide	$\text{Pb}^{+2} \text{P}^{-3}$	$\text{Pb}_3\text{P}_2$
potassium sulfite	$\text{K}^+ \text{SO}_3^{-2}$	$\text{K}_2\text{SO}_3$
cobalt (II) nitride	$\text{Co}^{+2} \text{N}^{-3}$	$\text{Co}_3\text{N}_2$
nickel (II) permanganate	$\text{Ni}^{+2} \text{MnO}_4^-$	$\text{Ni}(\text{MnO}_4)_2$

**p. 10**

Name the following molecular compounds:

$\text{SO}_3$  = sulfur trioxide

$\text{SiBr}_4$  = silicon tetrabromide

$\text{XeF}_6$  = xenon hexafluoride

$\text{ClF}_3$  = chlorine trifluoride

$\text{N}_2\text{O}_4$  = dinitrogen tetraoxide

$\text{Cl}_2\text{O}_7$  = dichlorine heptaoxide

$\text{PCl}_5$  = phosphorus pentachloride

$\text{P}_4\text{O}_{10}$  = tetraphosphorus decaoxide

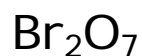
**p. 11**

Give the formulas for each of the following molecular compounds:

nitrogen trichloride



dibromine heptaoxide



dinitrogen pentasulfide



Name each of the following ions, and determine the formula and name of the corresponding acid that forms from the ion.

Name of Ion	Formula of Acid	Name of Acid
$\text{Cl}^-$ = chloride ion	$\Rightarrow$ $\text{HCl}$ (aq)	hydrochloric acid
$\text{CO}_3^{2-}$ = carbonate ion	$\Rightarrow$ $\text{H}_2\text{CO}_3$ (aq)	carbonic acid
$\text{SO}_3^{2-}$ = sulfite ion	$\Rightarrow$ $\text{H}_2\text{SO}_3$ (aq)	sulfurous acid
$\text{PO}_4^{3-}$ = phosphate ion	$\Rightarrow$ $\text{H}_3\text{PO}_4$ (aq)	phosphoric acid
$\text{NO}_3^-$ = nitrate ion	$\Rightarrow$ $\text{HNO}_3$ (aq)	nitric acid

**p. 12**

Name each of the following acids:

HBr (aq)= hydrobromic acid

H<sub>2</sub>CrO<sub>4</sub> (aq)= chromic acid

H<sub>2</sub>S (aq)= hydrosulfuric acid

HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> (aq)= acetic acid

H<sub>2</sub>Se (aq)= hydroselenic acid

H<sub>2</sub>SO<sub>4</sub> (aq)= sulfuric acid

Give the formula for each of the following acids: [Don't forget to indicate (aq)!]

perchloric acid = **\*\*SKIP\*\***

nitrous acid = HNO<sub>2</sub> (aq)

phosphoric acid = H<sub>3</sub>PO<sub>4</sub> (aq)

chromic acid = H<sub>2</sub>CrO<sub>4</sub> (aq)

hydroiodic acid = HI (aq)

carbonic acid = H<sub>2</sub>CO<sub>3</sub> (aq)

sulfurous acid = H<sub>2</sub>SO<sub>3</sub> (aq)

nitric acid = HNO<sub>3</sub> (aq)

**PUTTING IT ALL TOGETHER:**

Name each of the following compounds:

BaCl<sub>2</sub> = barium chloride

NiBr<sub>2</sub>= nickel (II) bromide

HNO<sub>3</sub>(aq) = nitric acid

SO<sub>2</sub>= sulfur dioxide

AgF = silver fluoride

PbSe<sub>2</sub>= lead (IV) selenide

CuSO<sub>3</sub>= copper (II) sulfite

PF<sub>5</sub>= phosphorus pentafluoride

K<sub>2</sub>SO<sub>4</sub>= potassium sulfate

Cr(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>3</sub> = chromium (III) acetate

FeP= iron (III) phosphide

Al<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub> = aluminum carbonate

NiMnO<sub>4</sub> = nickel (II) permanganate

Cd(OH)<sub>2</sub> = cadmium hydroxide