

Naming Compounds Handout Key

p. 2

Name each of the following monatomic cations:

Li^+ = lithium ion

Ag^+ = silver ion

Al^{+3} = aluminum ion

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

H^+ = hydrogen ion

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

K^+ = potassium ion

Ca^{+2} = calcium ion

Ba^{+2} = barium ion

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

Mg^{+2} = magnesium ion

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

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

Na^+ = sodium ion

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

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

p. 3

Name each of the following monatomic anions:

F^- = fluoride ion

Br^- = bromide ion

I^- = iodide ion

Cl^- = chloride ion

S^{-2} = sulfide ion

P^{-3} = phosphide ion

p. 4

Name each of the following polyatomic ions:

CN^- = cyanide ion

SO_4^{-2} = sulfate ion

OH^- = hydroxide ion

NH_4^+ = ammonium ion

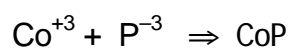
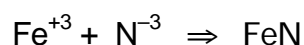
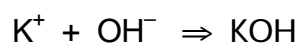
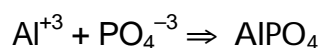
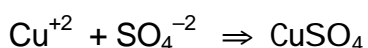
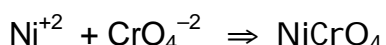
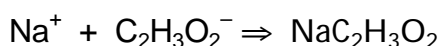
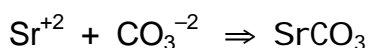
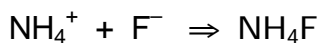
CrO_4^{-2} = chromate ion

NO_3^- = nitrate ion

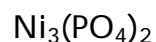
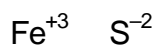
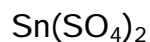
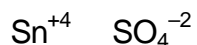
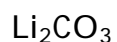
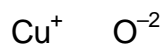
PO_4^{-3} = phosphate ion

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

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



p. 5 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
$\text{Mg}^{+2} \quad \text{F}^{-}$	<u> MgF_2 </u>	<u> magnesium fluoride </u>
$\text{Ni}^{+2} \quad \text{S}^{-2}$	NiS	nickel (II) sulfide
$\text{Ca}^{+2} \quad \text{Br}^{-}$	CaBr_2	calcium bromide
$\text{Al}^{+3} \quad \text{P}^{-3}$	AlP	aluminum phosphide
$\text{Co}^{+2} \quad \text{NO}_2^{-}$	$\text{Co}(\text{NO}_2)_2$	cobalt (II) nitrite
$\text{K}^+ \quad \text{CrO}_4^{-2}$	K_2CrO_4	potassium chromate
$\text{Fe}^{+3} \quad \text{O}^{-2}$	Fe_2O_3	iron (III) oxide

p. 8

Give the name for each compound given its chemical formula:

Formula	Individual Ions	Name of Compound
MgCl_2	$\text{Mg}^{+2} \quad \text{Cl}^{-}$	magnesium chloride
LiOH	$\text{Li}^+ \quad \text{OH}^{-}$	lithium hydroxide
ZnCO_3	$\text{Zn}^{2+} \quad \text{CO}_3^{2-}$	zinc carbonate
K_2S	$\text{K}^+ \quad \text{S}^{2-}$	potassium sulfide
FePO_4	$\text{Fe}^{3+} \quad \text{PO}_4^{3-}$	iron (III) phosphate
SnO_2	$\text{Sn}^{4+} \quad \text{O}^{2-}$	tin (IV) oxide
CuBr_2	$\text{Cu}^{2+} \quad \text{Br}^{-}$	copper (II) bromide
Ag_3N	$\text{Ag}^+ \quad \text{N}^{3-}$	silver nitride
$\text{Mn}(\text{CN})_2$	$\text{Mn}^{2+} \quad \text{CN}^{-}$	manganese (II) cyanide
$\text{AgC}_2\text{H}_3\text{O}_2$	$\text{Ag}^+ \quad \text{C}_2\text{H}_3\text{O}_2^{-}$	silver acetate

p. 9

Give the name for each compound given its chemical formula:

Name of Compound	individual ions	Formula
lithium cyanide	Li^+ CN^-	LiCN
iron (III) sulfate	Fe^{+3} SO_4^{-2}	$\text{Fe}_2(\text{SO}_4)_3$
calcium iodide	Ca^{+2} I^-	CaI_2
tin (IV) dichromate	Sn^{+4} $\text{Cr}_2\text{O}_7^{-2}$	$\text{Sn}(\text{Cr}_2\text{O}_7)_2$
silver nitrite	Ag^+ NO_2^-	AgNO_2
copper (II) acetate	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	Zn^{+2} CO_3^{-2}	ZnCO_3
lead (II) phosphide	Pb^{+2} P^{-3}	Pb_3P_2
potassium sulfite	K^+ SO_3^{-2}	K_2SO_3
cobalt (II) nitride	Co^{+2} N^{-3}	Co_3N_2
nickel (II) permanganate	Ni^{+2} MnO_4^-	$\text{Ni}(\text{MnO}_4)_2$

p. 10

Name the following molecular compounds:

SO_3 = sulfur trioxide

SiBr_4 = silicon tetrabromide

XeF_6 = xenon hexafluoride

ClF_3 = chlorine trifluoride

N_2O_4 = dinitrogen tetroxide

Cl_2O_7 = dichlorine heptaoxide

PCl_5 = phosphorus pentachloride

P_4O_{10} = tetraphosphorus decaoxide

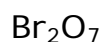
p. 11

Give the formulas for each of the following molecular compounds:

nitrogen trichloride

dibromine heptaoxide

dinitrogen pentasulfide



p. 11

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
CO_3^{-2} = carbonate ion \Rightarrow	H_2CO_3 (aq) =	carbonic acid
Cl^- = chloride ion \Rightarrow	HCl (aq) =	hydrochloric acid
SO_3^{-2} = sulfite ion \Rightarrow	H_2SO_3 (aq) =	sulfurous acid
PO_4^{-3} = phosphate ion \Rightarrow	H_3PO_4 (aq) =	phosphoric acid
NO_3^- = nitrate ion \Rightarrow	HNO_3 (aq) =	nitric acid

p. 12 Name each of the following acids:

HBr (aq) = hydrobromic acid	H_2CrO_4 (aq) = chromic acid
H_2SO_4 (aq) = sulfuric acid	$\text{HC}_2\text{H}_3\text{O}_2$ (aq) = acetic acid
HF (aq) = hydrofluoric acid	H_2SO_4 (aq) = sulfuric acid

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

phosphoric acid = H_3PO_4 (aq)	nitrous acid = HNO_2 (aq)
hydroiodic acid = HI (aq)	carbonic acid = H_2CO_3 (aq)
sulfurous acid = H_2SO_3 (aq)	nitric acid = HNO_3 (aq)

PUTTING IT ALL TOGETHER:

Name each of the following compounds:

BaCl_2 = barium chloride	NiBr_2 = nickel (II) bromide
HNO_3 (aq) = nitric acid	SO_2 = sulfur dioxide
AgF = silver fluoride	PbS_2 = lead (IV) sulfide
NiSO_3 = nickel (II) sulfite	PF_5 = phosphorus pentafluoride
K_2SO_4 = potassium sulfate	$\text{Cr}(\text{C}_2\text{H}_3\text{O}_2)_3$ = chromium (III) acetate
FeP = iron (III) phosphide	$\text{Al}_2(\text{CO}_3)_3$ = aluminum carbonate
NiSO_4 = nickel (II) sulfate	$\text{Zn}(\text{OH})_2$ = zinc hydroxide
KMnO_4 = potassium permanganate	$\text{Sn}(\text{CN})_2$ = tin (II) cyanide