

Chapter 5 Worksheet

Homework is not collected or graded, but should be worked on seriously every week.

Part A: Nomenclature of Ions and Ionic Compounds

1. Complete the table below for the following monatomic metal and nonmetal ions.

Atom Name	Ion Formula/ Charge	Ion Name
Barium	Ba^{2+}	barium ion
phosphorus	P^{3-}	Phosphide ion
copper	Cu^{+1}	Copper ion
iodine	I^{-1}	iodide
Gallium	Ga^{3+}	gallium ion
Selenium	Se^{2-}	Selenium ion
nickel	Ni^{3+}	Nickel(III) ion
Hydrogen	H^{+}	hydrogen ion
magnesium	Mg^{+2}	magnesium ion
aluminium	Al^{3+}	Aluminum ion
lead	Pb^{+4}	lead ion.
Potassium	K^{+}	potassium ion.
Sulfur	S^{2-}	sulfur ion
Fluoride	F^{-}	Fluoride ion
Zinc	Zn	zinc ion.

2. Write formulas for the ionic compounds listed below. It is helpful to first identify the cations and anions.

Name	Cation	Anion	Chemical Formula
Potassium nitride	K^{+}	N^{3-}	K_3N
Aluminum sulfide	Al^{3+}	S^{2-}	Al_2S_3
Barium nitrite	Ba^{+3}	NO_2^{-}	$Ba(NO_2)_3$
Chromium(III) bromide	Cr^{3+}	Br^{-}	$CrBr_3$
Zinc phosphate	Zn	PO_4^{3-}	Zn_3PO_4
Iron(II) carbonate	Fe^{2+}	CO_3^{2-}	$FeCO_3$
Potassium dichromate	K^{+}	$Cr_2O_7^{2-}$	$K_2Cr_2O_7$
Niobium(V) oxide	Nb^{5+}	O^{2-}	Nb_2O_5
Ammonium sulfate	NH_4^{+}	SO_4^{-}	NH_4SO_4
Calcium thiocyanate	Ca^{2+}	SCN^{-}	$Ca(SCN)_2$
Silver hydroxide	Ag^{+}	OH^{-}	$AgOH$
Manganese(IV) chlorate	Mn^{4+}	ClO_3^{2-}	$Mn(ClO_3)_2$
Lithium acetate	Li^{+}	CH_3COO^{-}	$LiCH_3COO$
Tin(II) bicarbonate	Sn^{2+}	HCO_3^{-}	$Sn(HCO_3)_2$
Gallium oxalate	Ga^{3+}	$C_2O_4^{2-}$	$Ga_2(C_2O_4)_3$
Copper(I) oxide	Cu^{+}	O^{2-}	Cu_2O

Strontium phosphide	Sr^{2+}	P^{3-}	Sr_3P_2
Mercury(II) sulfite	Hg^{2+}	SO_3^{2-}	$HgSO_3$
* Potassium peroxide	K^+	O_2^{2-}	K_2O_2
Ammonium bromide	NH_4^+	Br^-	NH_4Br
Cesium bisulfite	Cs^+	HSO_3^-	$CsHSO_3$
Cobalt(III) nitrate	Co^{3+}	NO_3^-	$Co(NO_3)_3$
Magnesium cyanide	Mg^{2+}	CN^-	$Mg(CN)_2$
* Titanium(IV) phosphite	Ti^{4+}	PO_3^-	$Ti_4(PO_3)_4$
Sodium hypochlorite	Na^+	ClO^-	$NaClO$
* Gold(I) thiosulfate	Au^+	$S_2O_3^{2-}$	$Ag_2S_2O_3$
Indium(III) iodide	In^{3+}	I^-	InI_3
Lithium carbide	Li^+	C^{4-}	Li_4C
Bismuth(V) chromate	Bi^{5+}	CrO_4^{2-}	$Bi_2(CrO_4)_5$
Nickel(II) Permanganate	Ni^{2+}	MnO_4^-	$Ni(MnO_4)_2$

3. Write the names for the ionic compounds listed below.

Formula	Name
MgH_2	magnesium hydride
$Ba(ClO_2)_2$	barium chlorite
SnF_2	tin(II) fluoride
KNO_3	potassium nitrate
Li_2CrO_4	lithium chromate
$(NH_4)_3P$	ammonium phosphide
TiO_2	titanium(IV) oxide
$RbCN$	rubidium cyanide
$Zn(MnO_4)_2$	zinc permanganate
$Al(HSO_4)_3$	aluminum hydrogen sulfate or aluminum bisulfate
Na_2S	sodium sulfide
$CuSO_4$	copper(II) sulfate
$Sr(HCO_3)_2$	strontium hydrogen carbonate or strontium bicarbonate
FeN	iron(III) nitride
$GaCl_3$	gallium chloride
$Mn(C_2O_4)_2$	manganese(IV) oxalate
$CaSe$	calcium selenide
$Au_2(SO_3)_3$	gold(III) sulfite
$NaClO_4$	sodium perchlorate
$Mg(OH)_2$	magnesium hydroxide