

Name _____

Date _____

Use with textbook pages 84-92.

Writing names and formulas of ionic compounds

You can use the periodic table on page 202 to help you answer these questions.

1. Complete the following table. First, identify each ion and its charge. Then, give the formula and name for each ionic compound formed. The table has been partially completed to help guide you.

	Chloride <u>Cl⁻</u>	Fluoride <u>F⁻</u>	Oxygen <u>O²⁻</u>
sodium <u>Na⁺</u>	NaCl sodium chloride	sodium fluoride <u>NaF</u>	Na ₂ O sodium oxide
magnesium <u>Mg²⁺</u>	MgCl ₂ Magnesium chloride	MgF ₂ magnesium fluoride	MgO magnesium oxide
calcium <u>Ca²⁺</u>	CaCl ₂ calcium chloride	CaF ₂ calcium fluoride	CaO calcium oxide

2. Write the names of the following compounds.

- (a) KCl potassium chloride (e) ZnS zinc sulfide
 (b) LiBr lithium bromide (f) SrO strontium oxide
 (c) BaF₂ barium fluoride (g) AlCl₃ aluminum chloride
 (d) Ag₃P silver phosphide (h) Mg₂C magnesium carbide

3. Write the chemical formulas for the following compounds.

- (a) beryllium sulphide BeS (e) calcium sulphide CaS
 (b) silver oxide Ag₂O (f) lithium nitride Li₃N
 (c) sodium bromide NaBr (g) rubidium chloride RbCl
 (d) zinc chloride ZnCl₂ (h) germanium bromide GeBr₄

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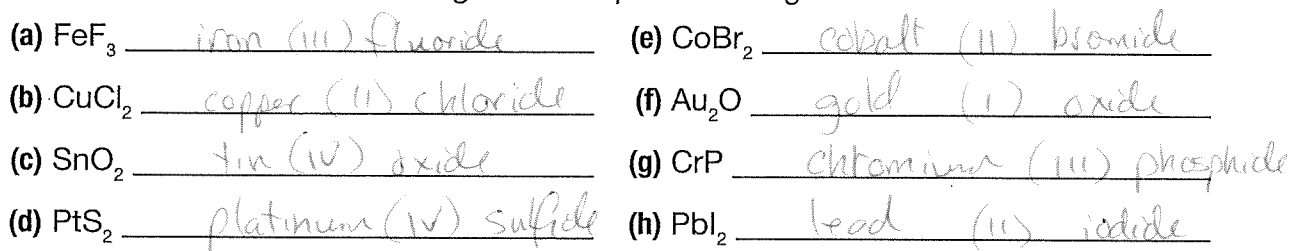
Compounds with a multivalent metal

You can use the periodic table on page 202 to help you answer these questions.

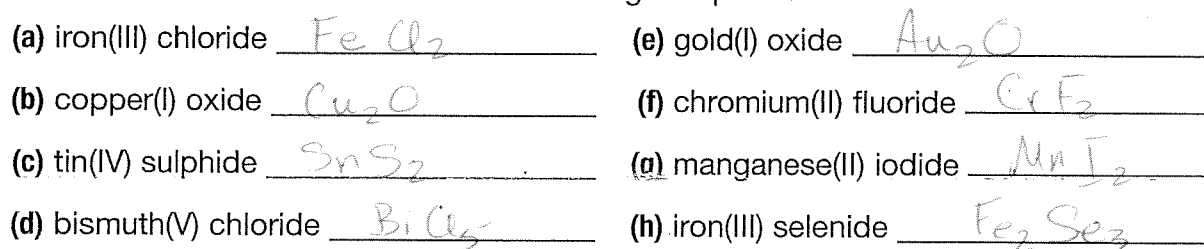
1. Write the formulas for the compounds formed from the following ions. Then name the compounds.

	Ions	Formula	Compound name
(a)	Mn^{3+} O^{2-}	Mn_2O_3	manganese (III) oxide
(b)	Pb^{3+} Br^-	PbBr_3	lead (III) bromide
(c)	Pt^{2+} Cl^-	PtCl_2	platinum (II) chloride
(d)	Au^{3+} S^{2-}	Au_2S_3	gold (III) sulfide
(e)	Pb^{4+} O^{2-}	PbO_2	lead (IV) oxide
(f)	Sb^{3+} S^{2-}	Sb_2S_3	antimony (III) sulfide
(g)	Fe^{2+} S^{2-}	FeS	iron (II) sulfide
(h)	Co^{3+} O^{2-}	Co_2O_3	cobalt (III) oxide

2. Write the names of the following ionic compounds using Roman numerals.



3. Write the chemical formulas for the following compounds.



Use with textbook pages 84–92.

Compounds with polyatomic ions

You can use the periodic table on page 202 to help you answer these questions.

1. Write the names of the following ionic compounds.

- (a) AgNO_3 silver nitrate (e) Ni(OH)_2 nickel (II) hydroxide
 (b) BaSO_4 barium sulfate (f) CuCO_3 copper (II) carbonate
 (c) NH_4Cl ammonium chloride (g) $\text{Sr(NO}_3)_2$ strontium (II) nitrate
 (d) $\text{Ca}_3(\text{PO}_4)_2$ calcium phosphate (h) $\text{Cr}_2(\text{SO}_4)_3$ chromium (III) sulfate

2. Write the chemical formulas for the following compounds.

- (a) calcium hydroxide Ca(OH)_2 (e) potassium dichromate $\text{K}_2\text{Cr}_2\text{O}_7$
 (b) ammonium chloride NH_4Cl (f) tin(II) hydroxide Sn(OH)_2
 (c) sodium nitrite NaNO_2 (g) ammonium phosphate $(\text{NH}_4)_3\text{PO}_4$
 (d) lithium hydrogen carbonate LiHCO_3 (h) iron(III) nitrate $\text{Fe(NO}_3)_3$

3. Write the formulas and names of the compounds with the following combination of ions. The table has been partially completed to help guide you.

	Positive ion	Negative ion	Formula	Compound name
(a)	Ca^{2+}	CO_3^{2-}	CaCO_3	calcium carbonate
(b)	K^+	SO_3^{2-}	K_2SO_3	potassium sulfite
(c)	Na^+	ClO_3^-	NaClO_3	sodium chlorate
(d)	Mg^{2+}	ClO_4^-	$\text{Mg}(\text{ClO}_4)_2$	magnesium perchlorate
(e)	Cs^+	OH^-	CsOH	cesium hydroxide
(f)	NH_4^+	PO_4^{3-}	$(\text{NH}_4)_3\text{PO}_4$	ammonium phosphate
(g)	Ca^{2+}	CN^-	Ca(CN)_2	calcium cyanide
(h)	Fe^{3+}	HSO_4^-	$\text{Fe}(\text{HSO}_4)_3$	iron (III) hydrogen sulphate

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Names and formulas of ionic compounds

Match each Compound Name on the left with the correct Chemical Formula on the right. Each Chemical Formula may be used only once.	
Compound Name	Chemical Formula
1. _____ aluminum sulphide	A. Al_2S_3
2. _____ aluminum sulphate	B. $AlSO_4$
3. _____ ammonium sulphite	C. $Al_2(SO_3)_3$
	D. $Al_2(SO_4)_3$
	E. NH_4SO_3
	F. NH_4SO_4
	G. $(NH_4)_2SO_3$
	H. $(NH_4)_2SO_4$

Circle the letter of the best answer.

- How many chlorine atoms are in the compound calcium chlorate, $Ca(ClO_3)_2$?
 - 1
 - 2
 - 3
 - 6
- What is the ending of an ionic compound consisting of two elements (a metal and a non-metal)?
 - ate
 - ide
 - ine
 - ite

- In a chemical formula, what part shows the relative numbers of ions in the compound?
 - the coefficient in front of the element symbol
 - the subscript to the right of the element symbol
 - the superscript to the right of the element symbol
 - the positive or negative number to the right of the element symbol

Use the following diagrams to answer question 7.

26	3+	25	2+
Fe	2+	Mn	3+
Iron		Manganese	4+
55.8		54.9	

- What do iron and manganese have in common?

I.	they are multivalent metals
II.	they have more than one ion charge
III.	their most common ion charge is 2+

- I and II only
 - I and III only
 - II and III only
 - I, II, and III
- In the name “cobalt(II) phosphate,” what does the Roman numeral reveal about cobalt?
 - it has gained two electrons
 - it has an ion charge of 2–
 - it has an ion charge of 2+
 - it can form two positive ions
 - What is the name for the compound $CaCl_2$?
 - calcium chlorate
 - calcium chloride
 - calcium chlorine
 - calcium(II) chloride