

Use with textbook pages 189–193.

Multivalent metals and polyatomic ions

1. Define the following terms:

(a) ionic compound

(b) multivalent metal

(c) polyatomic ion

2. Write the formulae and names of the compounds with the following combination of ions. The first row is completed to help guide you.

	Positive ion	Negative ion	Formula	Compound name
(a)	Pb ²⁺	O ²⁻	PbO	lead(II) oxide
(b)	Sb ⁴⁺	S ²⁻		
(c)			TlCl	
(d)				tin(II) fluoride
(e)			Mo ₂ S ₃	
(f)	Rh ⁴⁺	Br ⁻		
(g)				copper(I) telluride
(h)			NbI ₅	
(i)	Pd ²⁺	Cl ⁻		

3. Write the chemical formula for each of the following compounds.

(a) manganese(II) chloride _____	(f) vanadium(V) oxide _____
(b) chromium(III) sulphide _____	(g) rhenium(VII) arsenide _____
(c) titanium(IV) oxide _____	(h) platinum(IV) nitride _____
(d) uranium(VI) fluoride _____	(i) nickel(II) cyanide _____
(e) nickel(II) sulphide _____	(j) bismuth(V) phosphide _____

Name _____

Date _____

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4. Write the formulae for the compounds formed from the following ions. Then name the compounds.

	Ions	Formula	Compound name
(a)	K^+ NO_3^-	KNO_3	potassium nitrate
(b)	Ca^{2+} CO_3^{2-}		
(c)	Li^+ HSO_4^-		
(d)	Mg^{2+} SO_3^{2-}		
(e)	Sr^{2+} CH_3COO^-		
(f)	NH_4^+ $Cr_2O_7^{2-}$		
(g)	Na^+ MnO_4^-		
(h)	Ag^+ ClO_3^-		
(i)	Cs^+ OH^-		
(j)	Ba^{2+} CrO_4^{2-}		

5. Write the chemical formula for each of the following compounds.

(a) barium bisulphate _____	(f) calcium phosphate _____
(b) sodium chlorate _____	(g) aluminum sulphate _____
(c) potassium chromate _____	(h) cadmium carbonate _____
(d) calcium cyanide _____	(i) silver nitrite _____
(e) potassium hydroxide _____	(j) ammonium hydrogen carbonate _____

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Chemical names and formulas of ionic compounds

1. Write the name for each of the following compounds.

(a) BeS

(b) Hg₃N₂

(c) Cu(NO₃)₂

(d) Ag₂O

(e) CoBr₂

(f) Bi₃(PO₄)₅

(g) CaF₂

(h) Mn₂O₃

(i) Cr₂(SO₄)₃

(j) ZnCl₂

(k) Ni(OH)₂

(l) K₂Cr₂O₇

(m) ScF₃

(n) NaI

(o) Pb(CO₃)₂

(p) RbClO₂

(q) K₃P

(r) Mg(CN)₂

(s) SnS

(t) NaHCO₃

2. Write the chemical formula for each of the following compounds.

(a) aluminum bromide _____

(b) platinum(II) sulphide _____

(c) strontium sulfite _____

(d) scandium oxide _____

(e) titanium(IV) nitrite _____

(f) ammonium sulphate _____

(g) lithium selenide _____

(h) lead(II) hydrogen sulphate _____

(i) sodium acetate _____

(j) cesium chloride _____

(k) cadmium(II) hydroxide _____

(l) zinc phosphate _____

(m) barium chloride _____

(n) tin(II) permanganate _____

(o) lithium hypochlorite _____

(p) gold(III) sulphate _____

(q) sodium nitrate _____

(r) chromium(III) chloride _____

(s) potassium carbonate _____

(t) iron(III) bisulphate _____

Name _____

Date _____

Comprehension**Section 4.2***Use with textbook pages 193–197.*

Chemical names and formulas of covalent compounds

1. What is a covalent compound?

2. What type of bond is formed in a covalent compound?

3. What is used in naming covalent compounds?

4. Write the chemical formula for each of the following compounds.

(a) silicon dioxide _____	(i) dinitrogen pentoxide _____
(b) chlorine dioxide _____	(j) dinitrogen monoxide _____
(c) tellurium dioxide _____	(k) arsenic tetrabromide _____
(d) selenium trioxide _____	(l) arsenic pentachloride _____
(e) carbon disulphide _____	(m) disulphide pentoxide _____
(f) arsenic trichloride _____	(n) sulphur monochloride _____
(g) chlorine heptoxide _____	(o) phosphorus trichloride _____
(h) selenium difluoride _____	(p) diphosphorus pentoxide _____