

Writing and Visualizing Chemical Formulas (continued)

2. Write a chemical formula for each combination of ions.

Ions combined		Formula
1 calcium Ca^{2+}	1 carbonate CO_3^{2-}	CaCO_3
1 lead Pb^{2+}	2 nitrate NO_3^{-}	$\text{Pb}(\text{NO}_3)_2$
2 lithium Li^{+}	1 sulfate SO_4^{2-}	Li_2SO_4
1 chromium Cr^{3+}	1 phosphate PO_4^{3-}	CrPO_4
1 magnesium Mg^{2+}	1 carbonate CO_3^{2-}	MgCO_3
3 chromium Cr^{3+}	2 phosphate PO_4^{3-}	$\text{Cr}_3(\text{PO}_4)_2$
2 sodium Na^{+}	1 carbonate CO_3^{2-}	Na_2CO_3
1 ammonium NH_4^{+}	1 hydroxide OH^{-}	NH_4OH
1 barium Ba^{2+}	1 oxide O^{2-}	BaO
1 barium Ba^{2+}	2 nitrate NO_3^{-}	$\text{Ba}(\text{NO}_3)_2$
1 aluminum Al^{3+}	3 fluoride F^{-}	AlF_3
1 lead Pb^{2+}	4 chloride Cl^{-}	PbCl_4
3 lead Pb^{2+}	4 phosphate PO_4^{3-}	$\text{Pb}_3(\text{PO}_4)_4$
3 sodium Na^{+}	1 phosphide P^{3-}	Na_3P
2 lithium Li^{+}	1 oxide O^{2-}	Li_2O

Writing Formulas for Ionic Compounds

Write the formula for the compound.

1.	zinc bromide $Zn^{2+} Br^{-}$ $ZnBr_2$	21.	copper(II) chloride $Cu^{2+} Cl^{-}$ $CuCl_2$
2.	sodium oxide $Na^{+} O^{2-}$ Na_2O	22.	iron(III) oxide $Fe^{3+} O^{2-}$ Fe_2O_3
3.	lithium hydroxide $Li^{+} OH^{-}$ $LiOH$	23.	manganese(II) nitrate $Mn^{2+} NO_3^{-}$ $Mn(NO_3)_2$
4.	calcium fluoride $Ca^{2+} F^{-}$ CaF_2	24.	lead(IV) bromide $Pb^{4+} Br^{-}$ $PbBr_4$
5.	silver sulfide $Ag^{+} S^{2-}$ Ag_2S	25.	chromium(III) carbonate $Cr^{3+} CO_3^{2-}$ $Cr_2(CO_3)_3$
6.	ammonium sulfide $NH_4^{+} S^{2-}$ $(NH_4)_2S$	26.	tin(IV) chromate $Sn^{4+} CrO_4^{2-}$ $Sn(CrO_4)_2$
7.	magnesium oxalate $Mg^{2+} C_2O_4^{2-}$ MgC_2O_4	27.	lead(II) sulfate $Pb^{2+} SO_4^{2-}$ $PbSO_4$
8.	barium sulfate $Ba^{2+} SO_4^{2-}$ $BaSO_4$	28.	ammonium permanganate $NH_4^{+} MnO_4^{-}$ NH_4MnO_4
9.	potassium chlorite $K^{+} ClO_2^{-}$ $KClO_2$	29.	silver oxalate $Ag^{+} C_2O_4^{2-}$ $Ag_2C_2O_4$
10.	aluminum nitrate $Al^{3+} NO_3^{-}$ $Al(NO_3)_3$	30.	iron(III) hydroxide $Fe^{3+} OH^{-}$ $Fe(OH)_3$
11.	ammonium dichromate $NH_4^{+} Cr_2O_7^{2-}$ $(NH_4)_2Cr_2O_7$	31.	manganese(IV) phosphate $Mn^{4+} PO_4^{3-}$ $Mn_3(PO_4)_4$
12.	silver acetate $Ag^{+} C_2H_3O_2^{-}$ $AgC_2H_3O_2$	32.	iron(II) nitrate $Fe^{2+} NO_3^{-}$ $Fe(NO_3)_2$
13.	sodium chromate $Na^{+} CrO_4^{2-}$ Na_2CrO_4	33.	copper(II) carbonate $Cu^{2+} CO_3^{2-}$ $CuCO_3$
14.	lithium sulfide $Li^{+} S^{2-}$ Li_2S	34.	zinc chlorate $Zn^{2+} ClO_3^{-}$ $Zn(ClO_3)_2$
15.	aluminum chlorate $Al^{3+} ClO_3^{-}$ $Al(ClO_3)_3$	35.	iron(II) oxide $Fe^{2+} O^{2-}$ FeO
16.	calcium nitrate $Ca^{2+} NO_3^{-}$ $Ca(NO_3)_2$	36.	mercury(II) sulfate $Hg^{2+} SO_4^{2-}$ $HgSO_4$
17.	ammonium oxide $NH_4^{+} O^{2-}$ $(NH_4)_2O$	37.	lead(IV) sulfide $Pb^{4+} S^{2-}$ PbS_2
18.	potassium sulfide $K^{+} S^{2-}$ K_2S	38.	iron(III) carbonate $Fe^{3+} CO_3^{2-}$ $Fe_2(CO_3)_3$
19.	silver carbonate $Ag^{+} CO_3^{2-}$ Ag_2CO_3	39.	potassium oxalate $K^{+} C_2O_4^{2-}$ $K_2C_2O_4$
20.	magnesium phosphate $Mg^{2+} PO_4^{3-}$ $Mg_3(PO_4)_2$	40.	manganese(II) sulfide $Mn^{2+} S^{2-}$ MnS

Naming Ionic Compounds

Write the name of the compound.

1.	KCl	potassium chloride	21.	Li ₂ O	lithium oxide
2.	Na ₂ S	sodium sulfide	22. *	NaCN	sodium cyanide
3.	AlCl ₃	aluminum chloride	23. *	Ag ₂ CrO ₄	silver chromate
4.	BaO	barium oxide	24. *	Ca(ClO ₃) ₂	calcium chlorate
5.	Ag ₂ S	silver sulfide	25.	NH ₄ HCO ₃	ammonium hydrogen carbonate
6.	Al ₂ O ₃	aluminum oxide	26.	ZnI ₂	zinc iodide
7.	LiF	Lithium fluoride	27. *	KMnO ₄	potassium permanganate
8.	ZnF ₂	zinc fluoride	28.	BaBr ₂	barium bromide
9.	MgBr ₂	magnesium bromide	29.	Ca ₃ (PO ₄) ₂	calcium phosphate
10.	CaS	calcium sulfide	30. *	Na ₂ Cr ₂ O ₇	sodium dichromate
11.	KNO ₃	potassium nitrate	31.	LiNO ₃	Lithium nitrate
12.	MgSO ₄	magnesium sulfate	32.	MgS	magnesium sulfide
13.	Zn(OH) ₂	zinc hydroxide	33. *	NaClO	sodium hypochlorite
14.	NH ₄ I	ammonium iodide	34. *	K ₂ HPO ₄	potassium hydrogen phosphate
15.	Na ₂ CO ₃	sodium carbonate	35.	Ca(OH) ₂	calcium hydroxide
16. *	Mg(HSO ₄) ₂	magnesium bisulfate	36.	(NH ₄) ₃ PO ₄	ammonium phosphate
17.	AgOH	silver hydroxide	37. *	Al(H ₂ PO ₄) ₃	aluminum dihydrogen phosphate
18.	Zn ₃ (PO ₄) ₂	zinc phosphate	38.	AgCl	silver chloride
19.	(NH ₄) ₂ SO ₄	ammonium sulfate	39.	K ₂ SO ₃	potassium sulfite
20. *	Al(HS) ₃	aluminum hydrosulfide	40. *	NaClO ₄	sodium perchlorate

Naming Ionic Compounds with Multivalent Metal Ions

Write the name of the compound.

1.	$\overset{+2}{\text{Fe}} \overset{-2}{\text{O}}$ iron(II) oxide	21.	Ca(OH)_2 calcium(II) hydroxide
2.	$\overset{+4}{\text{Sn}} \overset{-2}{\text{S}}$ tin(IV) sulfide	22.	CrCl_3 chromium(III) chloride
3.	$\overset{+2}{\text{Pb}} \overset{-2}{\text{SO}_4}$ lead(II) sulfate	23.	CrCO_3 chromium(II) carbonate
4.	$\overset{+3}{\text{Cr}} \overset{-2}{\text{S}}$ chromium(III) sulfide	24.	Ag_2SO_4 silver(I) sulfate
5.	$\overset{+2}{\text{Cu}}(\text{NO}_3)_2$ copper(II) nitrate	25.	NH_4F ammonium fluoride
6.	$\overset{+3}{\text{Fe}}_2(\text{SO}_4)_3$ iron(III) sulfate	26.	$\text{Fe}_2(\text{Cr}_2\text{O}_7)_3$ iron(III) dichromate
7.	$\overset{+2}{\text{Sn}}\text{F}_2$ tin(II) fluoride	27.	PbS lead(II) sulfide
8.	$\overset{+2}{\text{Hg}}\text{SO}_4$ mercury(II) sulfate	28. *	$\overset{+2}{\text{Cu}}(\text{MnO}_4)_2$ copper(II) manganate
9.	$\overset{+2}{\text{Cu}}_3(\text{PO}_4)_2$ copper(II) phosphate	29.	$\text{Cr}_2(\text{SO}_4)_3$ chromium(III) sulfate
10. *	$\overset{+2}{\text{Mn}}(\text{MnO}_4)_2$ manganese(II) manganate	30.	$\overset{+2}{\text{Cu}}\text{F}_2$ copper(II) fluoride
11.	$\overset{+2}{\text{Fe}}(\text{OH})_2$ iron(II) hydroxide	31.	$\text{Cr}(\text{HCO}_3)_3$ chromium(III) bicarbonate
12.	$\overset{+4}{\text{Pb}}(\text{CrO}_4)_2$ lead(IV) chromate	32.	FePO_4 iron(III) phosphate
13.	$\overset{+1}{\text{Cu}}\text{Cl}$ copper(I) chloride	33.	Na_2S sodium sulfide
14.	$\overset{+4}{\text{Mn}}\text{O}_2$ manganese(IV) oxide	34.	$\overset{+4}{\text{Pb}}\text{Cl}_4$ lead(IV) chloride
15.	$\overset{+2}{\text{Sn}}\text{C}_2\text{O}_4$ tin(II) oxalate	35.	$\overset{+2}{\text{Hg}}(\text{NO}_3)_2$ mercury(II) nitrate
16.	$\overset{+3}{\text{Fe}}(\text{ClO}_3)_2$ iron(III) chlorate	36.	CrO chromium(II) oxide
17.	$\overset{+1}{\text{Hg}}_2\text{Br}_2$ mercury(I) bromide	37.	$\overset{+1}{\text{Hg}}_2(\text{NO}_3)_2$ mercury(I) nitrate
18. *	$\overset{+2}{\text{Cu}}(\text{HS})_2$ copper(II) hydrogen sulfide	38. *	CaC_2O_4 calcium oxalate
19.	$\overset{+4}{\text{Mn}}(\text{CO}_3)_2$ manganese(IV) carbonate	39.	$\text{Ba}_3(\text{PO}_4)_2$ barium(II) phosphate
20. *	$\overset{+4}{\text{Pb}}(\text{NO}_2)_4$ lead(IV) nitrite	40.	$\overset{+4}{\text{Sn}}(\text{SO}_4)_2$ tin(IV) sulfate