Write the formula for the following covalent compounds.

70. Sulfur trioxide _____
71. Phosphorous trioxide _____
72. Dinitrogen pentoxide _____
73. Oxygen dibromide _____
74. Tetrasulfur tetranitride _____
75. Sulfur hexafluoride _____
76. Carbon disulfide _____
77. Dinitrogen trioxide _____
78. Phosphorous pentoxide _____
79. Carbon dioxide _____

Write the names of the following acids.

ate→ic ite→ous

– ate family rules

per-ate add 1 oxygen

ate – memory

ite – remove 1 oxygen

hypo ite – remove another oxygen

B * 80. HCl(aq) hydrochloric acid
* 81. H_2SO_4(aq) sulfate → Sulfuric acid
82. $HClO_2$(aq) chlorite → chlorous acid
B 83. HBr(aq) hydrobromic acid
B 84. H_2S(aq) hydrosulfuric acid
85. HNO_2(aq) nitrite → nitrous acid
86. H_2CO_3(aq) carbonate → carbonic acid
87. H_3PO_5(aq) perphosphate → perphosphoric acid
88. H_3PO_4(aq) phosphate → phosphoric acid
B 89. HI(aq) hydroiodic acid

Write the formula for the following acids.

90. Nitric acid nitrate $^{-1}$ $H(NO_3)$ (aq)
91. Hydrofluoric acid H^{1+} F^{1-} HF (aq)
92. Hypochlorous acid hypochlorite $H(ClO)$ (aq)
94. Acetic acid acetate $H(C_2H_3O_2)$ (aq)
95. Hydrosulfuric acid S^{2-} H_2S (aq)
96. Sulfurous acid sulfite $^{2-}$ $H_2(SO_3)$ (aq)
97. Cyanic acid CN $H(CN)$ (aq)
98. Perchloric acid perchlorate $H(ClO_4)$ (aq)

Write the name of the following hydrates.

99. $MgSO4 \cdot 7 H_2O$ magnesium sulfate heptahydrate
100. $Ba(OH)_2 \cdot 8 H_2O$ barium hydroxide octahydrate
101. $CaCl_2 \cdot 2 H_2O$ calcium chloride dihydrate

Write the formula for the following hydrates.

102. Sodium sulfate decahydrate $Na_2^{1+}(SO_4^{2-}) \cdot 10 H_2O$
103. Potassium aluminum sulfate dodecahydrate K^{1+} Al^{3+} $(SO_4)_2^{2-} \cdot 12 H_2O$
104. Sodium tetraborate decahydrate

Nomenclature Review

Oxidation #

① Pure elements & diatomics = Zero
($H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2$)

② the charge of an ion = oxidation # (charge +/− = +/− oxidation #)

Ca^{2+} $Ca = +2$

③ The total of oxidation # for a compound = zero
for a polyatomic ion = the charge

④ only 1 element can be negative in a compound
(neg. element is one with highest electronegativity)
(aka — closest to fluorine)

⑤ hydrogen can be +1 or −1

⑥ oxygen is generally −2, except when peroxide O_2^{2-}
$O = -1$

Ionic Compounds (aka Metallic Compounds)

① Determine if metal is group A or group B/understairs

MA naming: State name of metal + nonmetal (change ending → ide)
State name of metal + polyatomic ion (NO changes)

MB naming: ① determine the oxidation # for the metal
② State name of metal + Roman numeral + non-metal (→ide)
+ polyatomic ion (no changes)

Formula Writing - total must = zero
Determine charges + use subscripts (multipliers) to help = zero

Covalent binary - nonmetallic binary 2 elements C N O F P S Cl Se Br I

naming: change subscript to prefix + change 2nd element ending to → ide

H_2O dihydrogen monoxide

formula writing: change prefixes to subscripts

pentasulfide octaoxide S_5O_8

Acids Binary + Ternary

Binary Acid = hydro = hydrogen + nonmetal in water (aqueous)

naming: hydro + nonmetal (ending changes to → ic) acid

formula writing: H + nonmetal based on charges (aq)

Ternary Acid = hydrogen + polyatomic ion

naming: ~~hydro~~ focus on name of polyatomic ion

ate → ic
ite → ous
} acid

formula writing: H + polyatomic ion based on charges (aq)

Hydrates MAH/MBH

naming: ① follow MA/MB directions for ionic compound
② prefix + hydrate

formula writing: ① balance using charges total = zero
② "Velcro" dot the # H_2O

Organic Hydrocarbons

hydrogen + carbon

we generally draw Carbon + leave "H" off for space issues but # of H can be determined by the general formulas.

Alkane - C_nH_{2n+2} - all C-C bonds are single ending → ane

Alkene - C_nH_{2n} - at least one C=C double bond ending → ene

Alkyne - C_nH_{2n-2} - at least one C≡C triple bond ending → yne

# of carbon in the parent chain (main chain) is indicated by a numeric prefix

1C = meth	5C = pent	9 = non	C-C-C
2C = eth	6C = hex	10 = dec	propane C_nH_{2n+2}
3C = prop	7C = hept	11 = undec	C_3H_8
4C = but	8C = oct	12 = dodec	

Practice

C-C-C-C (4C)
butane
C_4H_{10}

C-C≡C (3C)
propene
C_3H_4

$C_1-C_2-C_3\equiv C_4-C_5-C_6-C_7$
heptyne
C_7H_{12}

---

pentyne
C_5H_8

hexene
C_6H_{12}

nonane
C_9H_{20}

	N^{3-}	SO_4^{2-}
Fe^{2+}	a. Fe_3N_2	a. $Fe(SO_4)$
iron(II)	b. iron(II) nitride	b. iron(II) sulfate

1. BCl_3

10. skip

22. $Cu(SO_4)$