

Write the formula for the following covalent compounds.

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

Write the names of the following acids.

- ate → ic    ite → ous*
- ate family rules*
- |  |                           |  |                           |   |
|--|---------------------------|--|---------------------------|---|
| B 80. <sup>*</sup> HCl(aq)                           | <u>hydrochloric acid</u>  | 85. <u>HNO<sub>2</sub>(aq)</u>             | <u>nitrous acid</u>       | <i>per-ate add 1 oxygen</i>             |
| 81. <sup>*</sup> H <sub>2</sub> SO <sub>4</sub> (aq) | <u>Sulfuric acid</u>      | 86. <u>H<sub>2</sub>CO<sub>3</sub>(aq)</u> | <u>carbonic acid</u>      | <i>ate - memory</i>                     |
| 82. <u>HClO<sub>2</sub>(aq)</u>                      | <u>chlorous acid</u>      | 87. <u>H<sub>3</sub>PO<sub>5</sub>(aq)</u> | <u>perphosphoric acid</u> | <i>ite - remove 1 oxygen</i>            |
| B 83. HBr(aq)  | <u>hydrobromic acid</u>   | 88. <u>H<sub>3</sub>PO<sub>4</sub>(aq)</u> | <u>phosphoric acid</u>    | <i>hypo ite - remove another oxygen</i> |
| B 84. H <sub>2</sub> S(aq)                           | <u>hydrosulfuric acid</u> | B 89. HI(aq)                               | <u>hydroiodic acid</u>    |   |

Write the formula for the following acids.

- |   |  |  |   |
|---|--|--|---|
| 90. <sup>nitrate</sup> Nitric acid                | <u>H(NO<sub>3</sub>) (aq)</u>                          | 95. <sup>2-</sup> Hydrosulfuric acid       | <u>H<sub>2</sub>S (aq)</u>                |
| 91. <sup>1+</sup> <sup>1-</sup> Hydrofluoric acid | <u>HF (aq)</u>   | 96. <sup>sulfite</sup> Sulfurous acid      | <u>H<sub>2</sub>(SO<sub>3</sub>) (aq)</u> |
| 92. <sup>hypochlorite</sup> Hypochlorous acid     | <u>H(ClO) (aq)</u>                                     | 97. <sup>CN</sup> Cyanic acid              | <u>H(CN) (aq)</u>                         |
| 94. <sup>acetate</sup> Acetic acid                | <u>H(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>) (aq)</u> | 98. <sup>perchlorate</sup> Perchloric acid | <u>H(ClO<sub>4</sub>) (aq)</u>            |

Write the name of the following hydrates.

- |   |                                       |
|---|---------------------------------------|
| 99. MgSO <sub>4</sub> • 7 H <sub>2</sub> O    | <u>magnesium sulfate heptahydrate</u> |
| 100. Ba(OH) <sub>2</sub> • 8 H <sub>2</sub> O | <u>barium hydroxide octahydrate</u>   |
| 101. CaCl <sub>2</sub> • 2 H <sub>2</sub> O   | <u>calcium chloride dihydrate</u>     |

Write the formula for the following hydrates.

- |  |  |
|--|--|
| 102. <sup>1+</sup> <sup>2-</sup> Sodium sulfate decahydrate  | <u>Na<sub>2</sub>(SO<sub>4</sub>) • 10 H<sub>2</sub>O</u>  |
| 103. <sup>K<sup>1+</sup></sup> <sup>Al<sup>3+</sup></sup> <sup>2-</sup> Potassium aluminum sulfate dodecahydrate | <u>KAl(SO<sub>4</sub>)<sub>2</sub> • 12 H<sub>2</sub>O</u> |
| 104. Sodium tetraborate decahydrate  | <del>_____</del>   |

## 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  $\frac{+}{-}$  =  $\frac{+}{-}$  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  $\rightarrow$  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 ( $\rightarrow$  ide)  
+ polyatomic ion (no changes)

Formula writing - total must = zero

Determine charges + use subscripts (multipliers) to help = zero

## Covalent binary - nonmetallic binary 2 elements

Naming: change subscript to prefix + change 2<sup>nd</sup> element ending to  $\rightarrow$  ide

$H_2O$  dihydrogen monoxide

Formula writing: change prefixes to subscripts

pentasulfide octoxide  $S_5O_8$

C	N	O	F
P	S	Cl	
Se	Br		
I			

## Acids Binary + Ternary

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

naming: hydro + nonmetal (ending changes to  $\rightarrow$ ic) acid

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

**Ternary Acid** = hydrogen + polyatomic ion

naming: ~~hydro~~ focus on name of polyatomic ion  
ate  $\rightarrow$  ic  
ite  $\rightarrow$  ous  
ide  $\rightarrow$  ic } 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<sub>2</sub>O

# 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 -  $C_n H_{2n+2}$  - all C-C bonds are single ending → ane

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

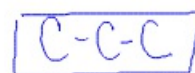
Alkyne -  $C_n H_{2n-2}$  - at least one  $C\equiv C$  triple bond ending → yne

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

1C = meth

5C = pent

9 = non



2C = eth

6C = hex

10 = dec

propane

$C_n H_{2n+2}$

3C = prop

7C = hept

11 = undec

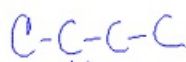
$C_3 H_8$

4C = but

8C = oct

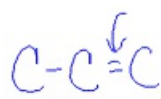
12 = dodec

## Practice



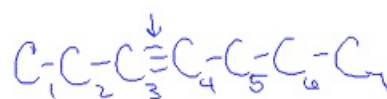
4C  
butane

$C_4 H_{10}$



3C  
propene

$C_3 H_6$



heptyne

$C_7 H_{12}$

pentyne

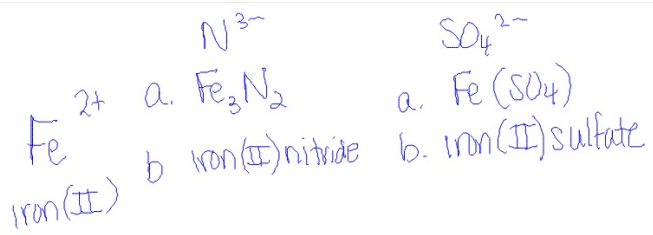
$C_5 H_8$

hexene

$C_6 H_{12}$

nonane

$C_9 H_{20}$



10. skip

