

COMPOUND NAMING

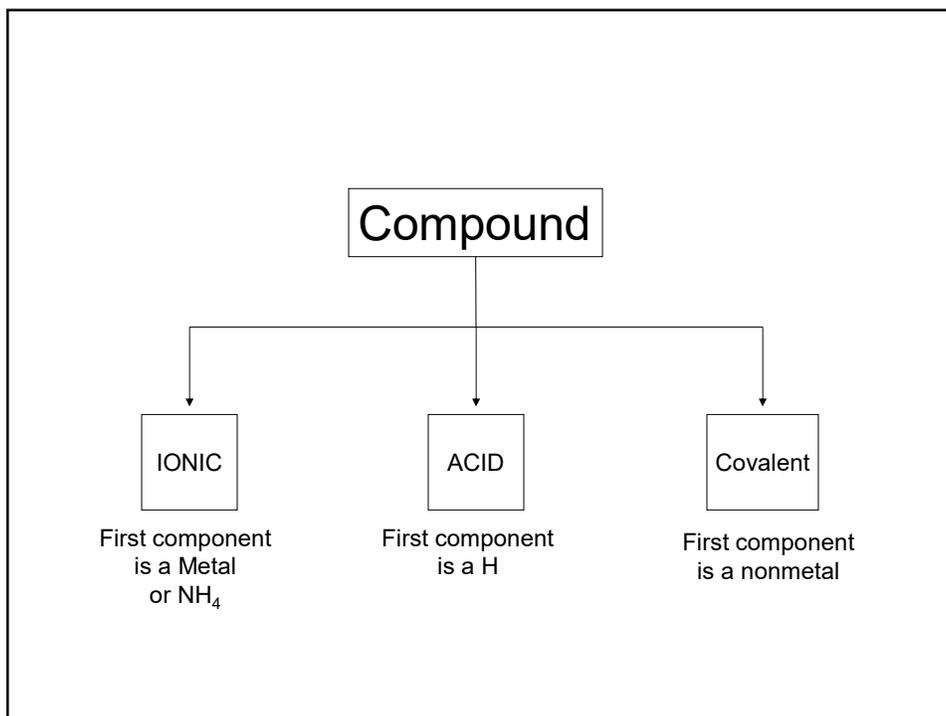
1. Ionic
2. Acid
3. Covalent

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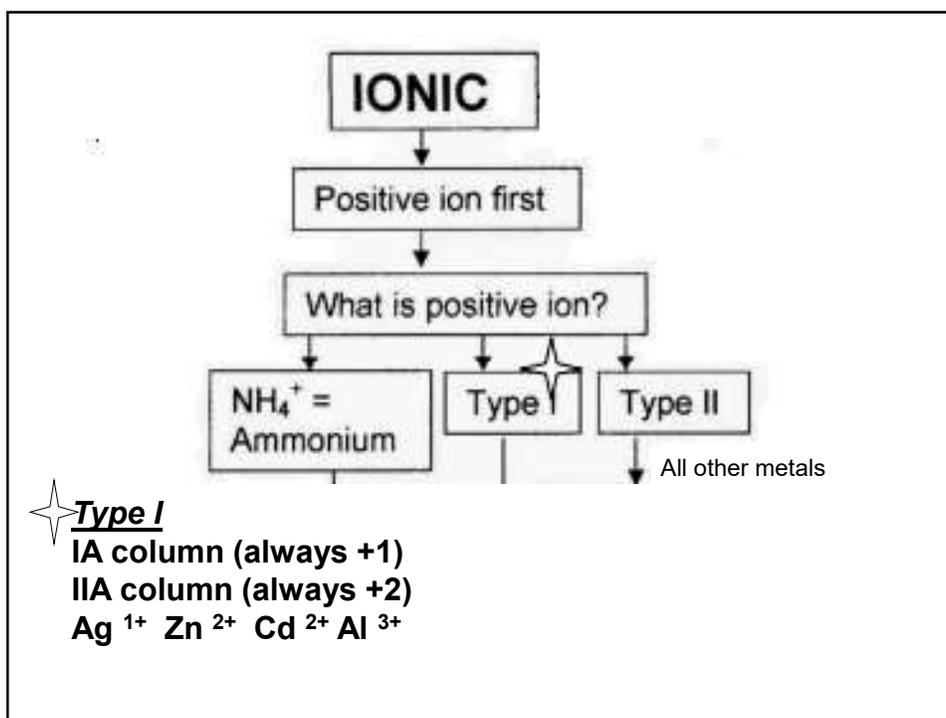
Metals, Nonmetals, and Metalloids

H																	nonmetals						He																						
Li	Be	metals																B	C	N	O	F	Ne																						
Na	Mg																	Al	Si	P	S	Cl	Ar																						
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr																												
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe																												
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn																												
Fr	Ra	Ac	Rf	Ha	Sg	Nh	Hs	Mt										metalloids																											
<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Ce</td><td>Pr</td><td>Nd</td><td>Pm</td><td>Sm</td><td>Eu</td><td>Gd</td><td>Tb</td><td>Dy</td><td>Ho</td><td>Er</td><td>Tm</td><td>Yb</td><td>Lu</td> </tr> <tr> <td>Th</td><td>Pa</td><td>U</td><td>Np</td><td>Pu</td><td>Am</td><td>Cm</td><td>Bk</td><td>Cf</td><td>Es</td><td>Fm</td><td>Md</td><td>No</td><td>Lr</td> </tr> </table>																		Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu																																
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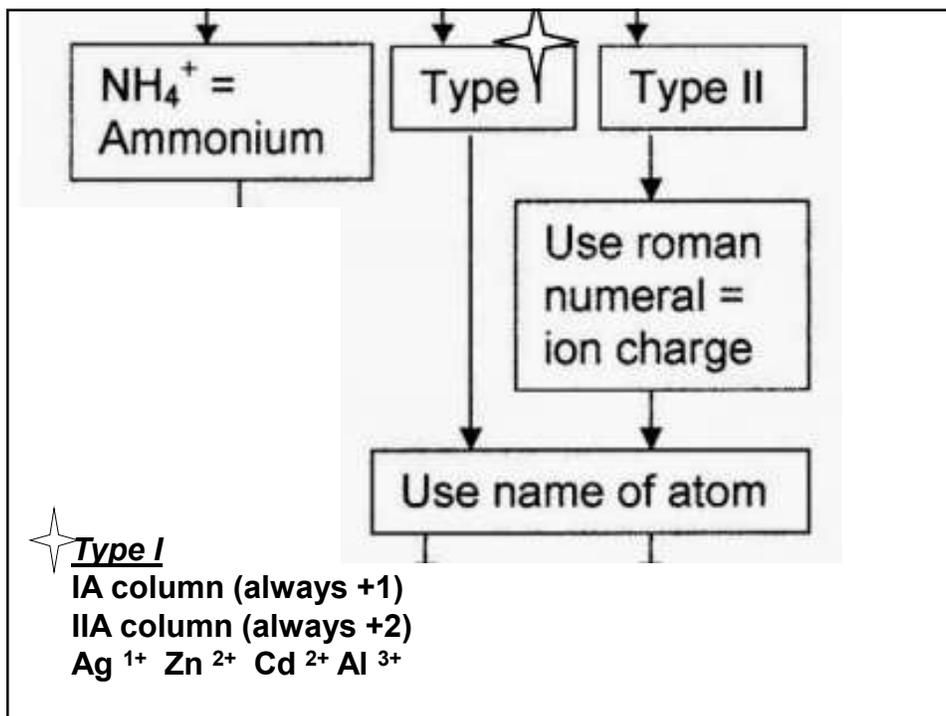
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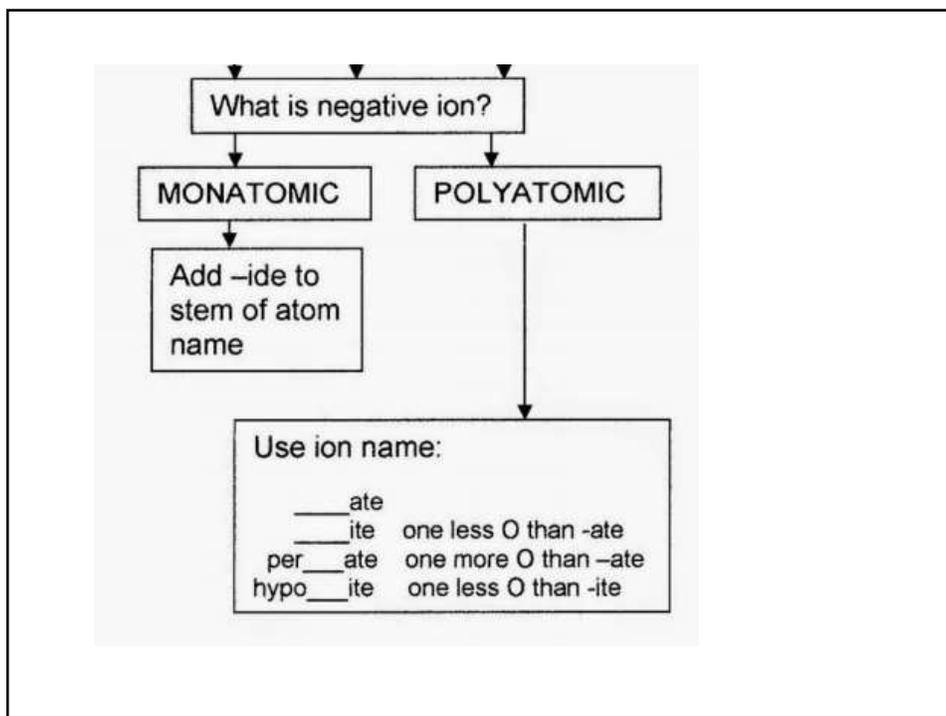
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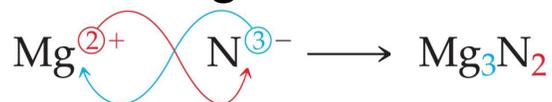


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Writing Formulas



- Because compounds are electrically neutral, one can determine the formula of a compound this way:
 - The charge on the cation becomes the subscript on the anion.
 - The charge on the anion becomes the subscript on the cation.
 - If these subscripts are not in the lowest whole-number ratio, divide them by the greatest common factor.

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Monatomic examples (name to formula)

- Barium Chloride
- Ammonium phosphide
- Cobalt IV Oxide
- Tungsten VI Iodide

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Monatomic examples (formula to name)

- BaCl_2
- Barium Chloride
- $(\text{NH}_4)_3\text{P}$
- Ammonium phosphide
- CoO_2
- Cobalt IV Oxide
- Wl_6
- Tungsten VI Iodide

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polyatomic examples (name to formula)

- Barium sulfate
- Ammonium chromate
- Cobalt IV phosphate
- Tungsten VI Carbide

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polyatomic examples (formula to name)

- BaSO_4
- Barium sulfate
- $(\text{NH}_4)_2\text{CrO}_4$
- Ammonium chromate
- $\text{Co}_3(\text{PO}_4)_2$
- Cobalt II phosphate
- $\text{W}(\text{C}_2)_3$
- Tungsten VI Carbide

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Polyatomic oxyanions ates =



boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998
aluminium 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453
gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904
indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90

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Oxyanions that ates = O₃

BO_3^{3-}	boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	FO_3^-
CO_3^{2-}	aluminium 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453	ClO_3^-
SiO_3^{2-}	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	BrO_3^-
NO_3^-	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90	IO_3^-

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Oxyanions that ates = O₄

PO_4^{3-}	boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	SO_4^{2-}
AsO_4^{3-}	aluminium 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453	SeO_4^{2-}
	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	TeO_4^{2-}
	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90	

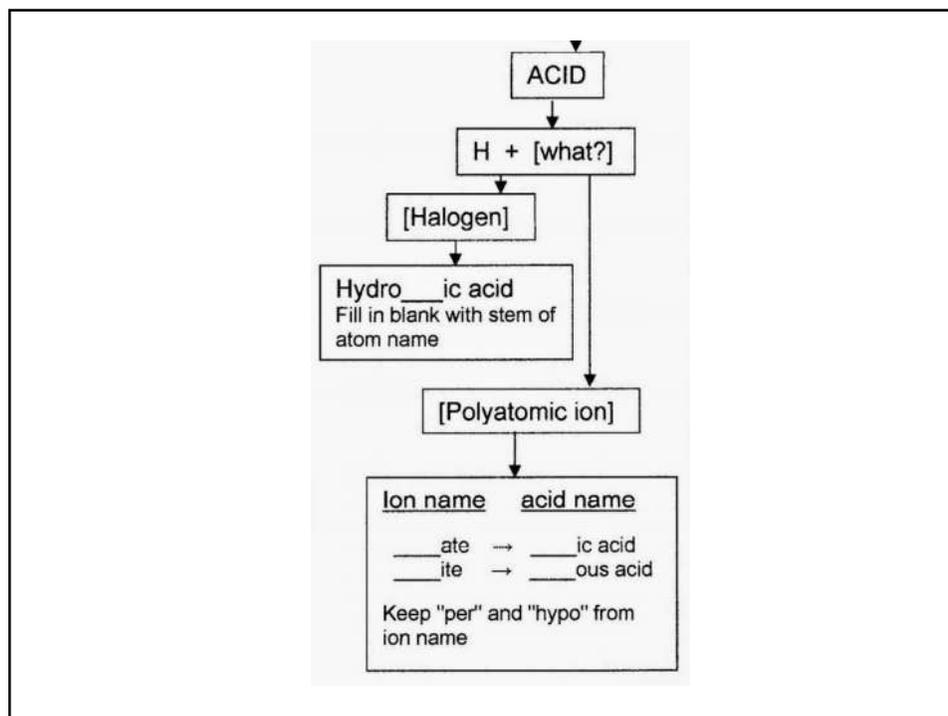
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Polyatomic Oxyanions

In this case, all ions have a -1 charge

- ClO_4 = perchlorate
- ClO_3 = chlorate
- ClO_2 = chlorite
- ClO = hypochlorite
- Cl^- = chloride

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Naming acids

- Acid – a compound that produces H⁺ ions in solution
- **Binary acids (2 elements)**
- Hydrogen + another element
 1. *Hydro* (indicates hydrogen)
 2. Root of second element +*ic*
 3. And *acid* at the end (Example HF = *Hydrofluoric acid*)
 4. If polyatomic ion with no oxygen, then name the same way (example, HCN = *Hydrocyanic acid*)

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Naming acids

- Acid – a compound that produces H⁺ ions in solution
- **Oxyacids**
- Hydrogen + oxyanion
 1. *Root anion + suffix + Acid*
 2. Anion suffix is *-ate* then replace with *-ic*
 3. Anion suffix is *-ite* then replace with *-ous*
 4. And *acid* at the end
 1. HNO₃ = *nitric acid*
 2. HNO₂ = *nitrous acid*
 5. Note hydrogen is **NOT** part of the name

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Naming Acids

- $\text{HClO}_4 =$
- $\text{HClO}_3 =$
- $\text{HClO}_2 =$
- $\text{HClO} =$
- $\text{HCl} =$

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Naming Acids

- $\text{HClO}_4 =$ perchloric acid
- $\text{HClO}_3 =$ chloric acid
- $\text{HClO}_2 =$ chlorous acid
- $\text{HClO} =$ hypochlorous acid
- $\text{HCl} =$ Hydrochloric acid

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Acid examples (name to formula)

- Hydrobromic acid
- Sulfurous acid
- Hypophosphorous acid
- Carbonic acid
- Arsenous acid

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Acid examples (formula to name)

- HBr
 - Hydrobromic acid
- H_2SO_3
 - Sulfurous acid
- H_3PO_2
 - Hypophosphorous acid
- H_2CO_3
 - Carbonic acid
- H_3AsO_3
 - Arsenous acid

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NOT ACID

Nonmetal + Nonmetal

USE PREFIXES
for the number of
each type of atom
(mono, di, tri, etc.)

- Use name of first atom with prefix (except mono)
- Add -ide to stem of name of second atom with prefix.

Mono = 1
Di = 2
Tri = 3
Tetra = 4
Penta = 5
Hexa = 6
Hepta = 7
Octa = 8
Nona = 9
Deca = 10

H

nonmetals

					He
B	C	N	O	F	Ne
Al	Si	P	S	Cl	Ar
Ga	Ge	As	Se	Br	Kr
In	Sn	Sb	Te	I	Xe
Tl	Pb	Bi	Po	At	Rn

metalloids

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Covalent (molecular compounds) examples (name to formula)

- Carbon tetrachloride
- Pentasulfur trioxide
- Heptafluorine dioxide
- Tricarbon octahydride (propane)

S_5O_3

F_7O_2

C_3H_8

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Covalent (molecular compounds) examples (formula to name)

- CCl_4
- Carbon tetrachloride
- C_5O_3
- Pentasulfur trioxide
- F_7O_2
- Heptafluorine dioxide
- C_3H_8
- Tricarbon octahydride (propane)