

Name: _____
Period: _____

Binary Ionic Compounds: Worksheet **#1**

1.) Sodium Oxide _____

2.) Calcium Oxide _____

3.) Aluminum Chloride _____

4.) Potassium Sulfide _____

5.) Magnesium Bromide _____

6.) Strontium Nitride _____

7.) Lithium Fluoride _____

8.) Beryllium Bromide _____

9.) Sodium Phosphide _____

10.) Calcium Nitride _____

11.) Na_2S _____

12.) Be_3P_2 _____

13.) CaBr_2 _____

14.) Sr_3N_2 _____

15.) KF _____

16.) AlN _____

17.) Al_2S_3 _____

18.) MgCl_2 _____

19.) BeO _____

20.) Rb_3P _____

Name: _____
Period: _____

Binary Ionic Compounds: Worksheet #2

1.) Lead (II) Oxide _____

2.) Manganese (II) Oxide _____

3.) Tin (II) Chloride _____

4.) Iron (III) Oxide _____

5.) Mercury (II) Bromide _____

6.) Copper (I) Oxide _____

7.) Cobalt (III) Chloride _____

8.) Lead (IV) Oxide _____

9.) Chromium (III) Chloride _____

10.) Chromium (II) Nitride _____

11.) Ni_2S_3 _____

12.) V_3P_4 _____

13.) CoBr_2 _____

14.) Cu_3N_2 _____

15.) SnS_2 _____

16.) FeN _____

17.) Fe_2S_3 _____

18.) MnCl_4 _____

19.) SnO _____

20.) Co_2S_3 _____

Name: _____
Period: _____

Binary Ionic Compounds: Worksheet **#3**

1) Lithium Oxide _____

2) Nickel (I) Sulfide _____

3) Potassium Fluoride _____

4) Calcium Phosphide _____

5) Chromium (III) Sulfide _____

6) Aluminum Oxide _____

7) Copper (II) Phosphide _____

8) Lead (IV) Bromide _____

9) Zinc Sulfide _____

10) Cobalt (II) Chloride _____

11) Gold Nitride _____

12) VS _____

13) PbO₂ _____

14) PbCl₂ _____

15) MgBr₂ _____

16) SrI₂ _____

17) Au₂S _____

18) NiBr₃ _____

19) BaBr₂ _____

20) CdS _____

21) FeCl₂ _____

22) Cu₂S _____

23) BeO _____

24) VO₂ _____

25) Ag₂O _____

26) Na₂S _____

27) LiH _____

28) VN _____

29) Ba₃P₂ _____

30) SnCl₄ _____

Name: _____
Period: _____

Binary Ionic Compounds: Worksheet **#4**

1) Potassium fluoride _____

2) Copper (I) oxide _____

3) Sodium nitride _____

4) Beryllium iodide _____

5) Strontium sulfide _____

6) Barium phosphide _____

7) Aluminum chloride _____

8) Nickel (III) sulfide _____

9) Chromium (III) nitride _____

10) Tin (IV) bromide _____

11) Lead (IV) oxide _____

12) Manganese (IV) phosphide _____

13) Ag_3N _____

14) Pb_3P_2 _____

15) AlP _____

16) V_3N_4 _____

17) Cs_2O _____

18) CdS _____

19) Ni_2O_3 _____

20) SnS_2 _____

21) AuBr _____

22) HgCl_2 _____

23) CoF_3 _____

24) PbI_4 _____

Name: _____

Period: _____

Complex Ionic Compounds: Worksheet #5

Write the formula.

- 1) barium sulfate _____
- 2) lead (II) acetate _____
- 3) nickel (II) hypochlorite _____
- 4) tin (IV) chlorate _____
- 5) manganese (IV) carbonate _____
- 6) copper (II) nitrite _____
- 7) iron (III) hydroxide _____
- 8) hydrogen cyanide _____
- 9) ammonium chloride _____
- 10) ammonium nitrate _____

Write the name.

- 11) $\text{Mg}(\text{ClO}_4)_2$ _____
- 12) LiClO_2 _____
- 13) CuOH _____
- 14) $\text{Cu}(\text{ClO}_3)_2$ _____
- 15) AgNO_3 _____
- 16) $\text{Al}(\text{ClO})_3$ _____
- 17) NaCN _____
- 18) $(\text{NH}_4)_2\text{C}_2\text{O}_4$ _____
- 19) CuCO_3 _____
- 20) Na_3PO_4 _____

Name: _____

Period: _____

Complex Ionic Compounds: Worksheet #6

Write the formula.

1) sodium hydroxide _____

2) ammonium chromate _____

3) hydrogen iodate _____

4) lead (IV) oxalate _____

5) nickel (II) iodite _____

6) copper (I) sulfate _____

7) cobalt (III) hypochlorite _____

8) lithium arsenate _____

9) dimercury dichromate _____

10) magnesium phosphate _____

11) dimercury bromate _____

12) zinc nitrate _____

13) manganese (IV) carbonate _____

14) potassium dichromate _____

15) iron (III) cyanide _____

16) lithium nitrite _____

17) beryllium bisulfite _____

18) barium hydroxide _____

19) ammonium permanganate _____

20) calcium cyanide _____

21) sodium bicarbonate _____

22) beryllium acetate _____

(continued on next page)

Worksheet #6 continued

Write the name.

23) $\text{Zn}(\text{ClO}_2)_2$ _____

24) $\text{Mg}_3(\text{PO}_4)_2$ _____

25) ZnCr_2O_7 _____

26) CaCO_3 _____

27) KMnO_4 _____

28) H_2O_2 _____

29) $\text{AgC}_2\text{H}_3\text{O}_2$ _____

30) $\text{Cd}(\text{HSO}_4)_2$ _____

31) CuFO_3 _____

32) H_2SO_4 _____

33) $\text{Cr}_2(\text{SO}_3)_3$ _____

34) LiCN _____

35) Cu_3AsO_4 _____

36) NH_4OH _____

37) ZnSO_4 _____

38) Au_2CrO_4 _____

39) $\text{Sr}_3(\text{PO}_4)_2$ _____

40) AgMnO_4 _____

41) $\text{Co}(\text{HSO}_4)_2$ _____

42) $\text{HC}_2\text{H}_3\text{O}_2$ _____

Name: _____

Chemistry

Period: _____

Acids: Worksheet #7

1. HNO_3 _____

2. $\text{HC}_2\text{H}_3\text{O}_2$ _____

3. H_3PO_4 _____

4. HCl _____

5. HClO _____

6. HFO_3 _____

7. HIO_2 _____

8. HBrO_4 _____

9. HI _____

10. sulfurous acid _____

11. carbonic acid _____

12. sulfuric acid _____

13. hydrobromic acid _____

14. hypobromous acid _____

15. perfluoric acid _____

16. hydrofluoric acid _____

17. nitrous acid _____

18. iodic acid _____

Name: _____
Period: _____

Mixed Ionic Compounds: Worksheet **#8**

1. SnBr₄ _____

2. KMnO₄ _____

3. PbO₂ _____

4. BeS _____

5. LiH _____

6. Fe(OH)₃ _____

7. Mg₃P₂ _____

8. FeO _____

9. CuCO₃ _____

10. BaS _____

11. Pb(C₂H₃O₂)₂ _____

12. ZnCl₂ _____

13. CuS _____

14. Al₂O₃ _____

15. NH₄NO₃ _____

16. MgS _____

17. Cu₂O _____

18. Ca(HCO₃)₂ _____

19. MnO₂ _____

20. Ba(ClO₃)₂ _____

21. cadmium bisulfate _____

22. copper (I) sulfate _____

23. hydrochloric acid _____

24. gold chloride _____

25. calcium hydride _____

26. manganese (II) oxide _____

27. beryllium nitride _____

28. sulfurous acid _____

29. zinc oxide _____

30. acetic acid _____

31. hypochlorous acid _____

32. lead (IV) bisulfite _____

33. nitrous acid _____

34. lithium nitrite _____

35. magnesium phosphate _____

36. sulfuric acid _____

37. sodium hydroxide _____

38. aluminum sulfide _____

39. chlorous acid _____

40. magnesium nitride _____

Name: _____

Chemistry

Period: _____

Molecular Compounds Worksheet #9

1. carbon monoxide _____

14. PI_3 _____

2. nitrogen dioxide _____

15. CS_2 _____

3. oxygen difluoride _____

16. PBr_3 _____

4. carbon tetraiodide _____

17. NO _____

5. dinitrogen trioxide _____

18. H_2O _____

6. phosphorus trichloride _____

19. P_4O_{10} _____

7. trisilicon tetranitride _____

20. SiO_2 _____

8. dinitrogen monoxide _____

21. N_2O_5 _____

9. phosphorus pentachloride _____

22. SO_3 _____

10. carbon tetrachloride _____

23. N_2O_4 _____

11. ammonia _____

24. ICl_3 _____

12. germanium disulfide _____

25. PBr_5 _____

13. sulfur dichloride _____

26. As_2O_5 _____

Name: _____
Period: _____

Chemistry

Mixed Compounds: Worksheet #10

1. $K_2Cr_2O_7$ _____
2. NO_2 _____
3. $Cu(NO_2)_2$ _____
4. $CuOH$ _____
5. $Sr_3(PO_4)_2$ _____
6. $(NH_4)_2CrO_4$ _____
7. OF_2 _____
8. $NaCN$ _____
9. $AgNO_3$ _____
10. $Co(HSO_4)_2$ _____
11. $Al(ClO)_3$ _____
12. HI _____
13. P_4O_{10} _____
14. $Na_2C_2O_4$ _____
15. As_2O_5 _____
16. $Mg(IO_4)_2$ _____
17. $NaClO$ _____
18. CCl_4 _____
19. $Ni(IO_2)_2$ _____
20. silicon dioxide _____
21. copper (II) chlorate _____
22. gold chromate _____
23. iron (III) cyanide _____
24. silver permanganate _____
25. perchloric acid _____
26. sodium chlorite _____
27. nickel (II) hypobromite _____
28. phosphorus tribromide _____
29. calcium carbonate _____
30. sodium chloride _____
31. sodium bicarbonate _____
32. zinc nitrate _____
33. silver acetate _____
34. cobalt (III) chloride _____
35. hydrobromic acid _____
36. carbon disulfide _____
37. copper (II) nitride _____
38. dinitrogen monoxide _____

Mixed Compounds **#11** (continued on next page)

1. SnBr₄ _____
2. CO₂ _____
3. PbO₂ _____
4. BeS _____
5. LiH _____
6. Mg₃P₂ _____
7. CO _____
8. H₂O _____
9. FeO _____
10. Hg₂O _____
11. BaS _____
12. ZnCl₂ _____
13. CuS _____
14. CCl₄ _____
15. Al₂O₃ _____
16. MgS _____
17. SO₂ _____
18. Cu₂O _____
19. MnO₂ _____
20. NO₂ _____
21. SiS₂ _____
22. As₂O₃ _____
23. Pb(C₂H₃O₂)₂ _____
24. CuCO₃ _____
25. Ba(ClO₃)₂ _____

26. Fe(OH)₃ _____
27. K₂Cr₂O₇ _____
28. KMnO₄ _____
29. HNO₃ _____
30. Cu(NO₂)₂ _____
31. CuOH _____
32. Sr₃(PO₄)₂ _____
33. NH₄NO₃ _____
34. Ca(HCO₃)₂ _____
35. (NH₄)₂CrO₄ _____
36. HF _____
37. HIO₃ _____
38. NaCN _____
39. AgNO₃ _____
40. Co(HSO₄)₂ _____
41. Al(ClO)₃ _____
42. HI _____
43. H₃PO₄ _____
44. Na₂C₂O₄ _____
45. Li₃AsO₄ _____
46. Mg(IO₄)₂ _____
47. HClO _____
48. H₂CO₃ _____
49. Ni(IO₂)₂ _____
50. PI₅ _____

51. cadmium bisulfate _____
52. copper (I) sulfate _____
53. hydrochloric acid _____
54. gold chloride _____
55. calcium hydride _____
56. dinitrogen tetroxide _____
57. carbon disulfide _____
58. manganese (II) oxide _____
59. beryllium nitride _____
60. sulfurous acid _____
61. mercury (I) chromate _____
62. zinc oxide _____
63. dinitrogen monoxide _____
64. acetic acid _____
65. hypobromous acid _____
66. lead (IV) bisulfite _____
67. lithium nitrite _____
68. magnesium phosphate _____
69. sodium hydroxide _____
70. aluminum sulfide _____
71. iodine trichloride _____
72. magnesium nitride _____
73. potassium oxide _____
74. silicon dioxide _____
75. copper (II) chlorate _____

76. gold chromate _____
77. iron (III) cyanide _____
78. nitrous acid _____
79. silver permanganate _____
80. phosphorous pentabromide _____
81. ammonia _____
82. perfluoric acid _____
83. sodium chlorite _____
84. nickel (II) hypobromite _____
85. lithium bromate _____
86. sulfuric acid _____
87. calcium carbonate _____
88. oxygen difluoride _____
89. iodous acid _____
90. sodium bicarbonate _____
91. zinc nitrate _____
92. silver acetate _____
93. cobalt (III) chloride _____
94. hydrobromic acid _____
95. tetraphosphorous decoxide _____
96. mercury (I) bromide _____
97. chromium (III) sulfide _____
98. arsenic tribromide _____
99. copper (II) nitride _____
100. zinc dichromate _____

Mixed Compounds: Worksheet #12

- aluminum hypochlorite _____
- carbon tetrachloride _____
- calcium hydride _____
- sodium cyanide _____
- hypobromous acid _____
- copper (II) carbonate _____
- dinitrogen tetroxide _____
- zinc chloride _____
- magnesium phosphide _____
- zinc dichromate _____
- calcium carbonate _____
- potassium permanganate _____
- potassium oxide _____
- silver acetate _____
- cadmium bisulfate _____
- oxygen difluoride _____
- sulfuric acid _____
- chromium (III) sulfide _____
- lithium hydride _____
- copper (II) sulfide _____
- dinitrogen monoxide _____
- zinc oxide _____
- sodium hydroxide _____
- ammonium chromate _____
- hydroiodic acid _____
- BaS _____
- Al₂S₃ _____
- NO₂ _____
- HIO₃ _____
- Pb(C₂H₃O₂)₂ _____
- SiS₂ _____
- Ni(BrO)₂ _____
- HFO₄ _____
- SnBr₄ _____
- HCl _____
- MnO₂ _____
- Cu(NO₂)₂ _____
- SiO₂ _____
- HBr _____
- Fe(OH)₃ _____
- Mg(IO₄)₂ _____
- LiBrO₃ _____
- Cu₂O _____
- Cu₃N₂ _____
- CuOH _____
- Cu(ClO₃)₂ _____
- AgNO₃ _____
- H₂O _____



PERIODIC TABLE OF THE ELEMENTS

1 H Hydrogen 1.008																	2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.179
11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.06	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.08	21 Sc Scandium 44.956	22 Ti Titanium 47.88	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.847	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.922	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80
37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium 97.907	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.411	49 In Indium 114.82	50 Sn Tin 118.710	51 Sb Antimony 121.767	52 Te Tellurium 127.60	53 I Iodine 126.905	54 Xe Xenon 131.29
55 Cs Cesium 132.905	56 Ba Barium 137.327	57 * La Lanthanum 138.905	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.85	75 Re Rhenium 186.207	76 Os Osmium 190.2	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.967	80 Hg Mercury 200.59	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium 209.982	85 At Astatine 209.987	86 Rn Radon 222.018
87 Fr Francium 223.020	88 Ra Radium 226.025	89 ** Ac Actinium 227.028	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (262)	108 Hs Hassium (265)	109 Mt Meitnerium (268)	110	111	112	113	114	115	116	117	118

Lanthanide Series

58 * Ce Cerium 140.12	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.24	61 Pm Promethium 144.913	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.50	67 Ho Holmium 164.930	68 Er Erbium 167.26	69 Tm Thulium 168.934	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
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Actinide Series

90 ** Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium 252.083	100 Fm Fermium 257.095	101 Md Mendelevium 268.099	102 No Nobelium 269.101	103 Lr Lawrencium 260.105
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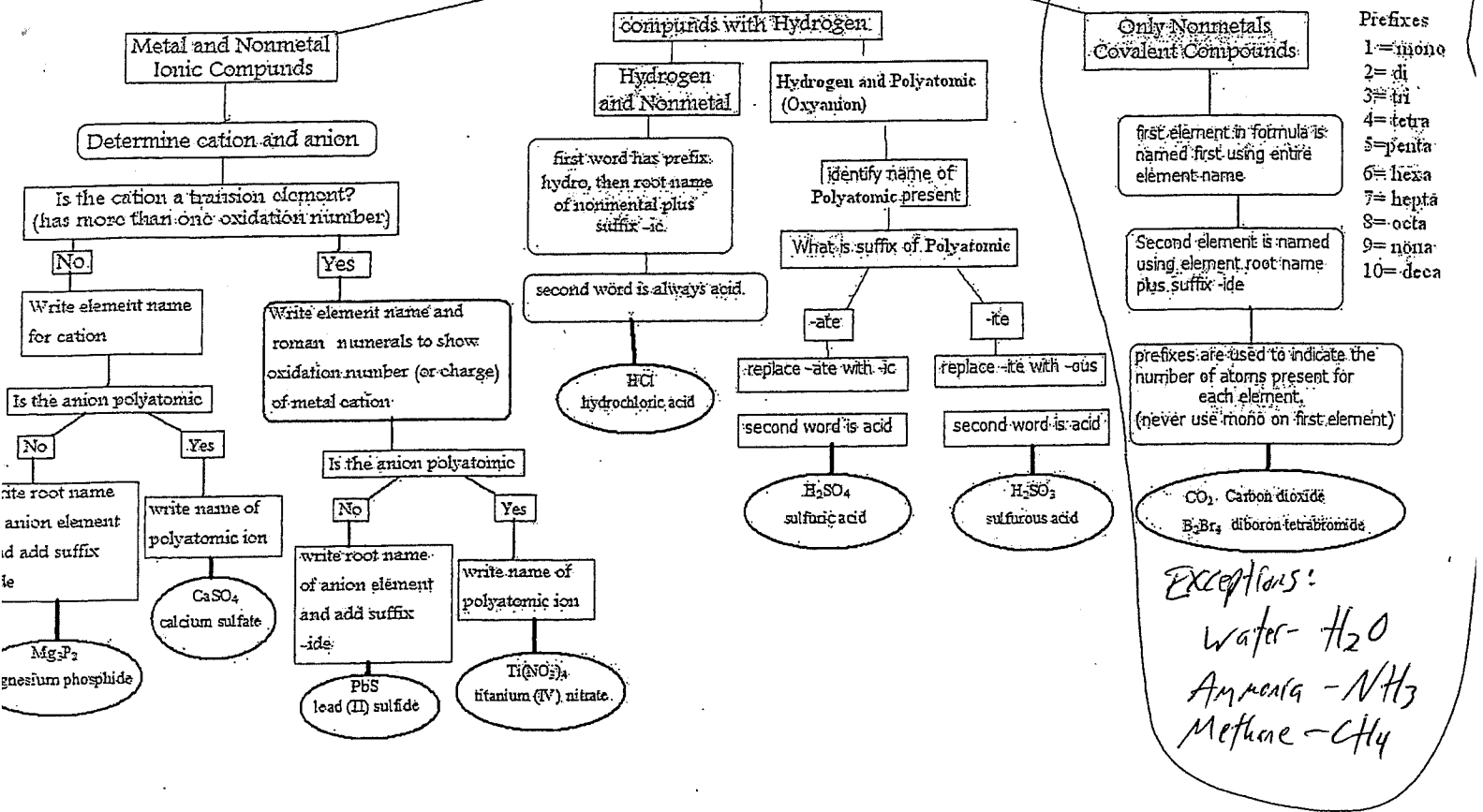
Common Ions and Their Charges

A mastery of the common ions, their formulas and their charges, is essential to success in AP Chemistry. You are expected to know all of these ions on the first day of class, when I will give you a quiz on them. You will always be allowed a periodic table, which makes indentifying the ions on the left "automatic." For tips on learning these ions, see the opposite side of this page.

From the table:	
Cations	Name
H ⁺	Hydrogen
Li ⁺	Lithium
Na ⁺	Sodium
K ⁺	Potassium
Rb ⁺	Rubidium
Cs ⁺	Cesium
Be ²⁺	Beryllium
Mg ²⁺	Magnesium
Ca ²⁺	Calcium
Ba ²⁺	Barium
Sr ²⁺	Strontium
Al ³⁺	Aluminum
Anions	Name
H ⁻	Hydride
F ⁻	Fluoride
Cl ⁻	Chloride
Br ⁻	Bromide
I ⁻	Iodide
O ²⁻	Oxide
S ²⁻	Sulfide
Se ²⁻	Selenide
N ³⁻	Nitride
P ³⁻	Phosphide
As ³⁻	Arsenide
Type II Cations	Name
Fe ³⁺	Iron(III)
Fe ²⁺	Iron(II)
Cu ²⁺	Copper(II)
Cu ⁺	Copper(I)
Co ³⁺	Cobalt(III)
Co ²⁺	Cobalt(II)
Sn ⁴⁺	Tin(IV)
Sn ²⁺	Tin(II)
Pb ⁴⁺	Lead(IV)
Pb ²⁺	Lead(II)
Hg ²⁺	Mercury(II)

Ions to Memorize	
Cations	Name
Ag ⁺	Silver
Zn ²⁺	Zinc
Hg ₂ ²⁺	Mercury(I)
NH ₄ ⁺	Ammonium
Anions	Name
NO ₂ ⁻	Nitrite
NO ₃ ⁻	Nitrate
SO ₃ ²⁻	Sulfite
SO ₄ ²⁻	Sulfate
HSO ₄ ⁻	Hydrogen sulfate (bisulfate)
OH ⁻	Hydroxide
CN ⁻	Cyanide
PO ₄ ³⁻	Phosphate
HPO ₄ ²⁻	Hydrogen phosphate
H ₂ PO ₄ ⁻	Dihydrogen phosphate
NCS ⁻	Thiocyanate
CO ₃ ²⁻	Carbonate
HCO ₃ ⁻	Hydrogen carbonate (bicarbonate)
ClO ⁻	Hypochlorite
ClO ₂ ⁻	Chlorite
ClO ₃ ⁻	Chlorate
ClO ₄ ⁻	Perchlorate
BrO ⁻	Hypobromite
BrO ₂ ⁻	Bromite
BrO ₃ ⁻	Bromate
BrO ₄ ⁻	Perbromate
IO ⁻	Hypoiodite
IO ₂ ⁻	iodite
IO ₃ ⁻	iodate
IO ₄ ⁻	Periodate
C ₂ H ₃ O ₂ ⁻	Acetate
MnO ₄ ⁻	Permanganate
Cr ₂ O ₇ ²⁻	Dichromate
CrO ₄ ²⁻	Chromate
O ₂ ²⁻	Peroxide
C ₂ O ₄ ²⁻	Oxalate
NH ₂ ⁻	Amide
BO ₃ ³⁻	Borate
S ₂ O ₃ ²⁻	Thiosulfate

LOOK AT ELEMENTS IN COMPOUND



- Prefixes
- 1= mono
 - 2= di
 - 3= tri
 - 4= tetra
 - 5= penta
 - 6= hexa
 - 7= hepta
 - 8= octa
 - 9= nona
 - 10= deca

EXCEPTIONS:
 water - H₂O
 Ammonia - NH₃
 Methane - CH₄

Chemical Formulas

chemical formula: a formula that describes a compound by listing how many of each element it's made of

- elements in a chemical formula are almost always listed in order by increasing electronegativity. (Exceptions are organic compounds and acids.) The least electronegative element is listed first, and the most electronegative one is listed last.

(Note: the variable x is usually used for electronegativity.)

For example: a compound made from Mg^{2+} ions ($x_{Mg} = 1.31$) and Cl^{-} ions ($x_{Cl} = 3.16$) would be $MgCl_2$, not Cl_2Mg .

Polyatomic Ions in Formulas

- Polyatomic ions are always kept together in a formula.

For example, the compound made from NH_4^{+} ions and OH^{-} ions is NH_4OH , not H_5NO .

- If you have more than one of a polyatomic ion in a formula, put it in parentheses (to indicate that it is a polyatomic ion and it stays together) and put a subscript outside the parentheses.

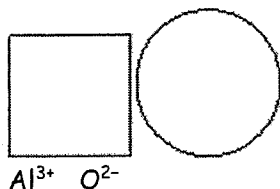
For example, the polyatomic ion "phosphate" has the formula PO_4^{3-} . The compound made from the Ca^{2+} ions and PO_4^{3-} ions has 2 Ca^{2+} ions and 3 PO_4^{3-} ions. The formula is therefore $Ca_3(PO_4)_2$. The "2" outside the parentheses means we have two of the entire polyatomic ion PO_4 (a total of 2 phosphorus atoms and 4 oxygen atoms).

Balancing Charges

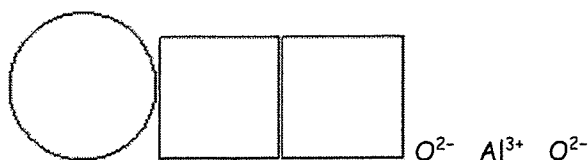
The charges of the ions in a chemical formula always add up to zero. This is because positive and negative charges attract each other. This continues to happen until the charges balance and there is no more attraction.

For example, suppose we made a compound from Al^{3+} ions and O^{2-} ions.

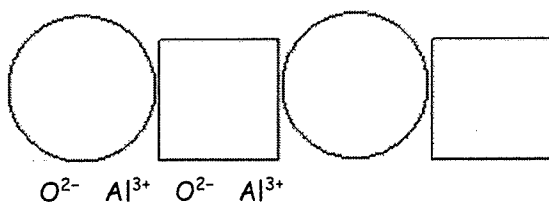
- Start with an Al^{3+} ion. It is positive, so it will attract a negative O^{2-} ion, giving us:



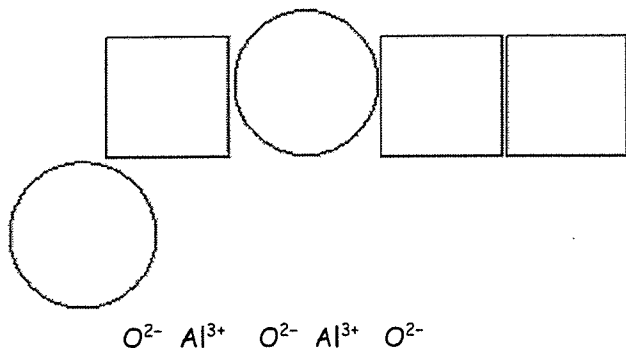
2. The net (overall) charge is still positive (+1), so it will attract another negative O^{2-} ion, giving us:



3. Now the group has a net -1 charge, so it will attract a positive Al^{3+} ion, giving us:



4. Now the group has a net +2 charge, so it will attract another negative O^{2-} ion, giving us:



5. Finally, all of the positive and negative charges have exactly cancelled. The compound has no net charge, so it doesn't attract any more positive or negative ions.
6. We ended up with 2 Al^{3+} ions and 3 O^{2-} ions, which means the formula is $(Al^{3+})_2(O^{2-})_3$. When we write the formula, we simplify it by leaving out the charges, giving us the chemical formula Al_2O_3 .

Shortcut to Balancing Charges

The total positive and total negative charge will always be equal, and will be the least common multiple (L.C.M.) of the charges of the positive and negative ions.

In the compound made from aluminum and oxygen the charges of the ions are +3 (for Al), and -2 (for O). The LCM of 3 and 2 is 6, which means the total positive charge in the formula will be +6, and the total negative charge in the formula will be -6.

To get +6, we need 2 Al^{3+} ions, and to get -6 we need 3 O^{2-} ions. Thus, the formula is once again $(\text{Al}^{3+})_2(\text{O}^{2-})_3$ or simply Al_2O_3 .