

The Following are tables and Constants that I expect you to KNOW from CHEM1450:

TABLE 1.2 SI Prefix Multipliers

Prefix	Symbol	Multiplier	
exa	E	1,000,000,000,000,000,000	(10 ¹⁸)
peta	P	1,000,000,000,000,000	(10 ¹⁵)
tera	T	1,000,000,000,000	(10 ¹²)
giga	G	1,000,000,000	(10 ⁹)
mega	M	1,000,000	(10 ⁶)
kilo	k	1000	(10 ³)
deci	d	0.1	(10 ⁻¹)
centi	c	0.01	(10 ⁻²)
milli	m	0.001	(10 ⁻³)
micro	μ	0.000001	(10 ⁻⁶)
nano	n	0.000000001	(10 ⁻⁹)
pico	p	0.000000000001	(10 ⁻¹²)
femto	f	0.000000000000001	(10 ⁻¹⁵)
atto	a	0.000000000000000001	(10 ⁻¹⁸)

© 2011 Pearson Education, Inc.

Elements That Form Ions with Predictable Charges


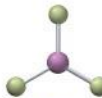
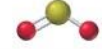




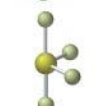
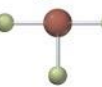




1A	2A	Transition metals						3A	4A	5A	6A	7A	8A
H ⁺										N ³⁻	O ²⁻	H ⁻	Noble
Li ⁺												F ⁻	
Na ⁺	Mg ²⁺							Al ³⁺			S ²⁻	Cl ⁻	Gases
K ⁺	Ca ²⁺										Se ²⁻	Br ⁻	
Rb ⁺	Sr ²⁺										Te ²⁻	I ⁻	
Cs ⁺	Ba ²⁺												

© 2011 Pearson Education, Inc.

TABLE 3.5 Some Common Polyatomic Ions

Name	Formula	Name	Formula
Acetate	C ₂ H ₃ O ₂ ⁻	Hypochlorite	ClO ⁻
Carbonate	CO ₃ ²⁻	Chlorite	ClO ₂ ⁻
Hydrogen carbonate (or bicarbonate)	HCO ₃ ⁻	Chlorate	ClO ₃ ⁻
Hydroxide	OH ⁻	Perchlorate	ClO ₄ ⁻
Nitrite	NO ₂ ⁻	Permanganate	MnO ₄ ⁻
Nitrate	NO ₃ ⁻	Sulfite	SO ₃ ²⁻
Chromate	CrO ₄ ²⁻	Hydrogen sulfite (or bisulfite)	HSO ₃ ⁻
Dichromate	Cr ₂ O ₇ ²⁻	Sulfate	SO ₄ ²⁻
Phosphate	PO ₄ ³⁻	Hydrogen sulfate (or bisulfate)	HSO ₄ ⁻
Hydrogen phosphate	HPO ₄ ²⁻	Cyanide	CN ⁻
Dihydrogen phosphate	H ₂ PO ₄ ⁻	Peroxide	O ₂ ²⁻
Ammonium	NH ₄ ⁺		

© 2011 Pearson Education, Inc.

TABLE 10.1 Electron and Molecular Geometries						
Electron Groups*	Bonding Groups	Lone Pairs	Electron Geometry	Molecular Geometry	Approximate Bond Angles	Example
2	2	0	Linear	Linear	180°	$\text{:}\ddot{\text{O}}=\text{C}=\ddot{\text{O}}\text{:}$ 
3	3	0	Trigonal planar	Trigonal planar	120°	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}-\text{B}-\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$ 
3	2	1	Trigonal planar	Bent	<120°	$\text{:}\ddot{\text{O}}=\ddot{\text{S}}-\ddot{\text{O}}\text{:}$ 
4	4	0	Tetrahedral	Tetrahedral	109.5°	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$ 
4	3	1	Tetrahedral	Trigonal pyramidal	<109.5°	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{N}-\text{H} \\ \\ \text{H} \end{array}$ 
4	2	2	Tetrahedral	Bent	<109.5°	$\text{H}-\ddot{\text{O}}-\text{H}$ 
5	5	0	Trigonal bipyramidal	Trigonal bipyramidal	120° (equatorial) 90° (axial)	$\begin{array}{c} \text{:}\ddot{\text{Cl}}\text{:} \\ \text{:}\ddot{\text{Cl}}-\text{P}-\ddot{\text{Cl}}\text{:} \\ \text{:}\ddot{\text{Cl}}\text{:} \end{array}$ 
5	4	1	Trigonal bipyramidal	Seesaw	<120° (equatorial) <90° (axial)	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}-\text{S}-\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$ 
5	3	2	Trigonal bipyramidal	T-shaped	<90°	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}-\text{Br}-\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$ 
5	2	3	Trigonal bipyramidal	Linear	180°	$\text{:}\ddot{\text{F}}-\text{Xe}-\ddot{\text{F}}\text{:}$ 
6	6	0	Octahedral	Octahedral	90°	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}-\text{S}-\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$ 
6	5	1	Octahedral	Square pyramidal	<90°	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}-\text{Br}-\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$ 
6	4	2	Octahedral	Square planar	90°	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}-\text{Xe}-\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$ 

*Count only electron groups around the central atom. Each of the following is considered one electron group: a lone pair, a single bond, a double bond, a triple bond, or a single electron.

© 2011 Pearson Education, Inc.

$$\text{Molarity} = \frac{\text{moles solute}}{\text{Liters Solution}}$$

$$PV = nRT$$

$$\text{density} = \frac{\text{mass}}{\text{Volume}}$$

$$N_A = 6.02 \times 10^{23}$$