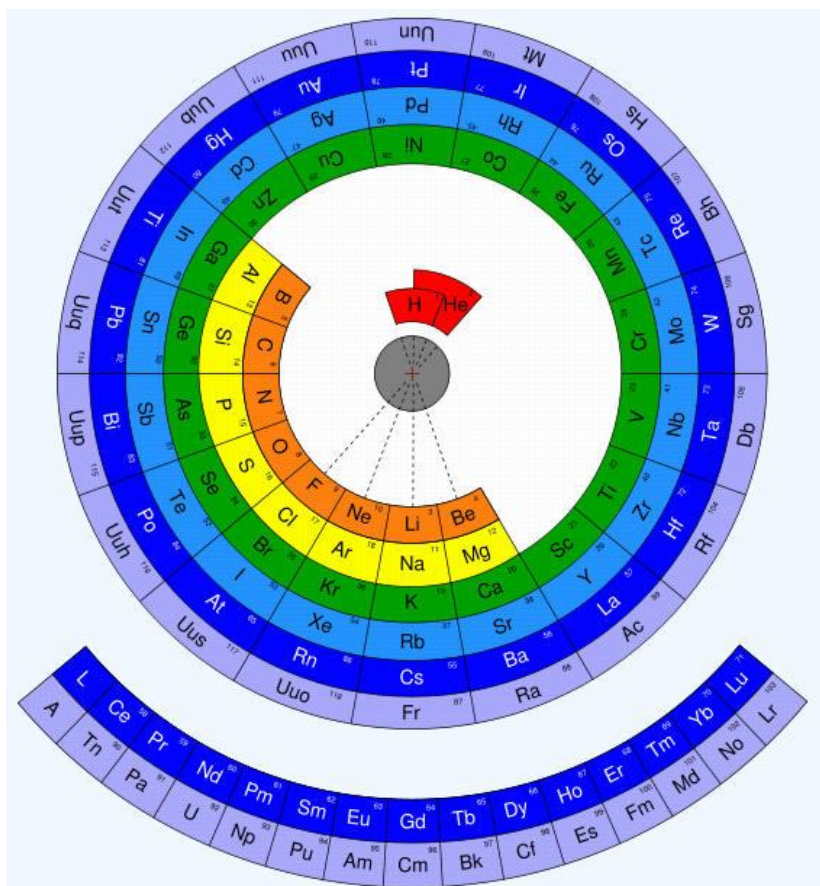


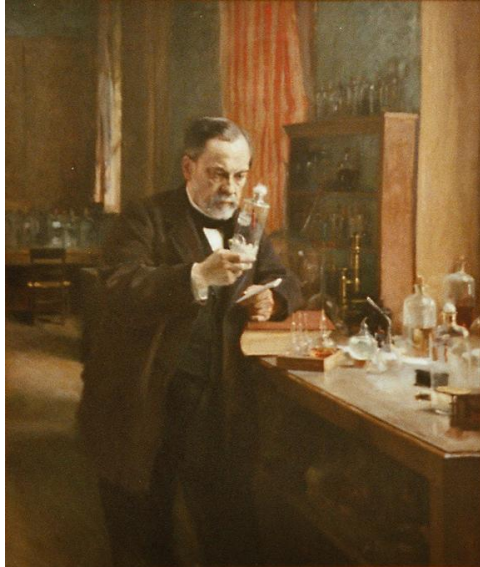


Chemistry 101



Washtenaw Community College

Copyright Larry P. Taylor, Ph.D. All Rights Reserved



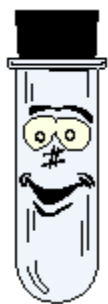
Chance Favors The Prepared Mind

Louis Pasteur (mid 1800's)

CEM 101 Introduction to Chemistry



Unit	Lecture Topics
Unit 0 Introduction	First Day Boost Grades
Unit 1 Measurements	Science Matter & Energy Measurements
Unit 2 Scientific Notation	Exponents Calculator Practice
Unit 3 Significant Figures	Rounding Density
Unit 4 Atoms & Molecules	Atoms Periodic Table
Unit 5 Formulas & Notations	Formula Nomenclature Formula Calculations Formula Review
Unit 6 Balancing Equations	More Moles Empirical Formulas Balancing Reactions
Unit 7 Stoichiometry	Stoichiometry Yields
Unit 8 Gases	Gases Gas Laws
Unit 9 Solutions/Titration	Solutions Solution Concentrations Titration
Unit 10 Acids & Bases	Titration Calculations Acids & Bases
Unit 11 Atomic Theory	Atomic Theory Electron Configuration Lewis Dots Bonding Fini



Chemistry 101

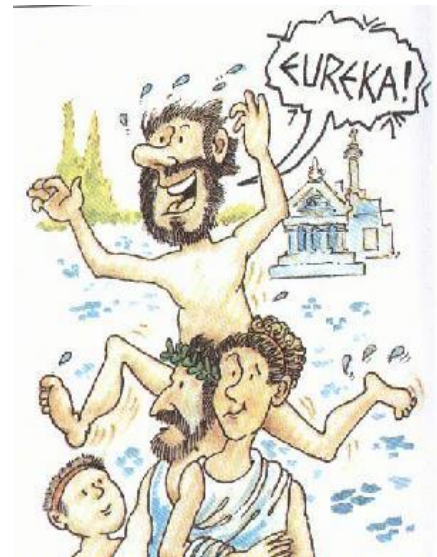


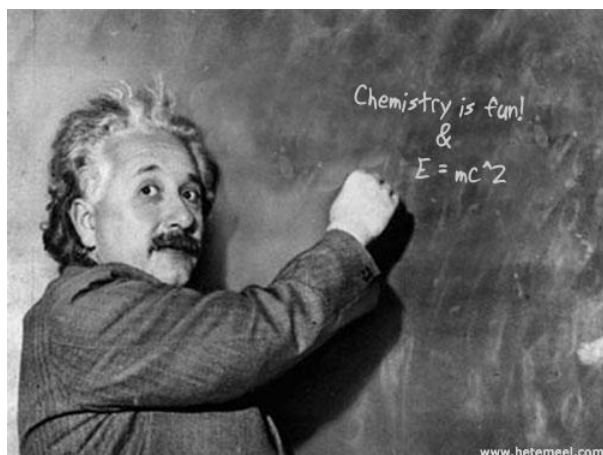
First Day





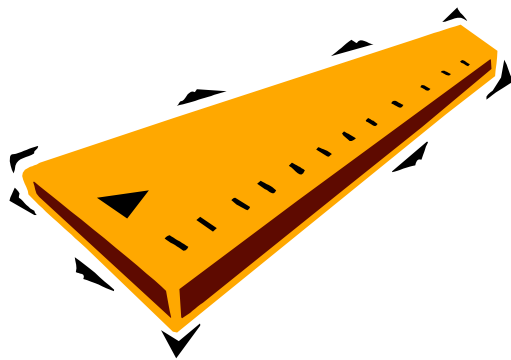
The Nature of Science





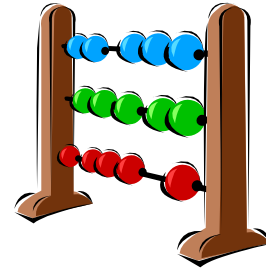
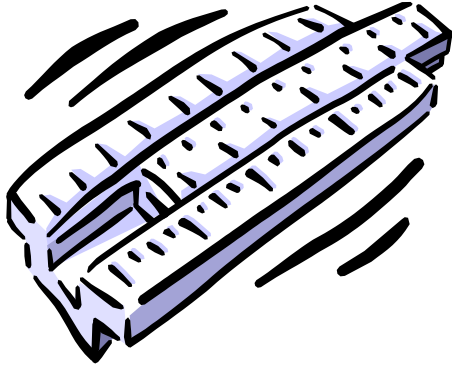
Matter & Energy



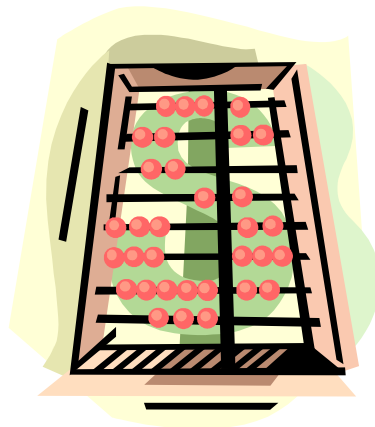


Measurements





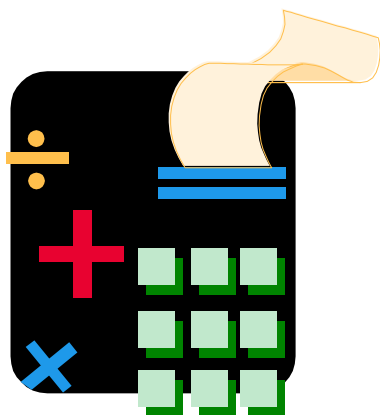
Exponents



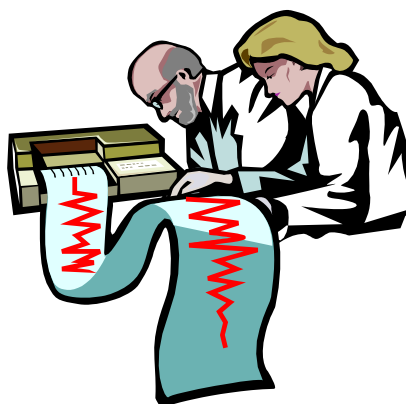


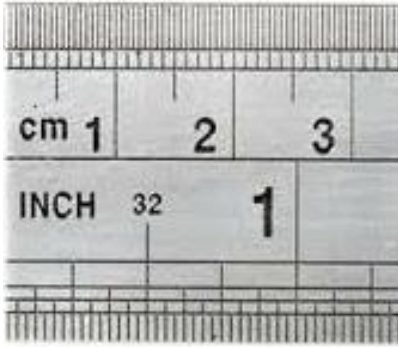
Calculator Practice





Rounding

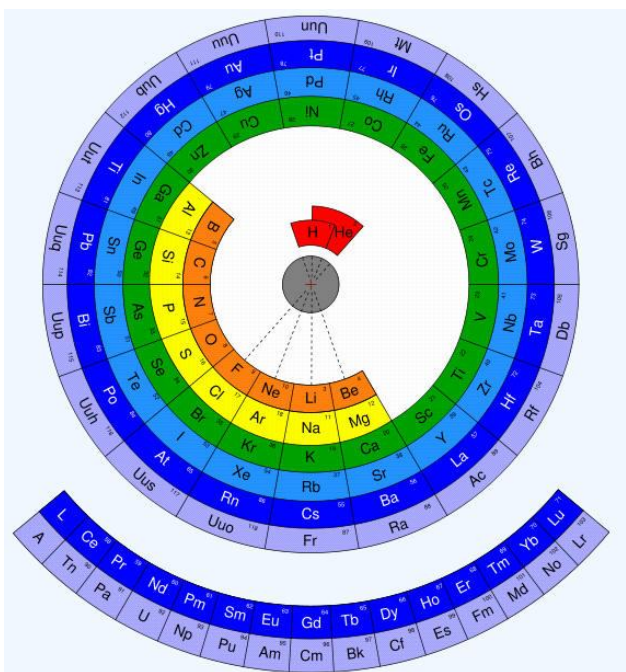




Metric \Leftrightarrow English

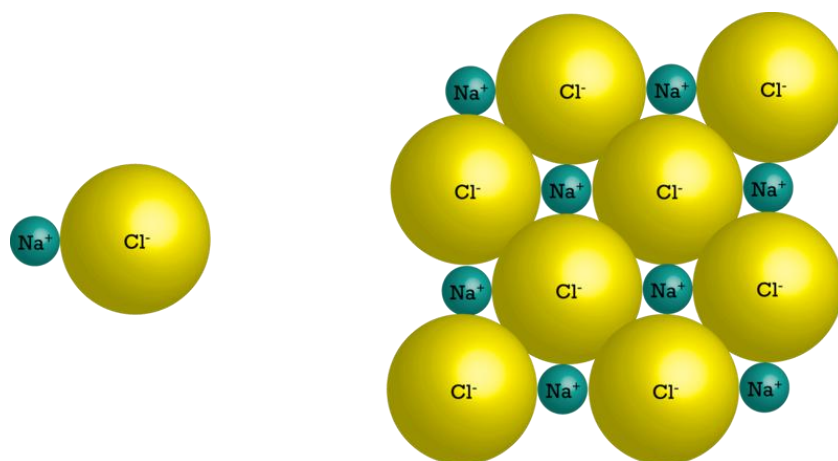
Density



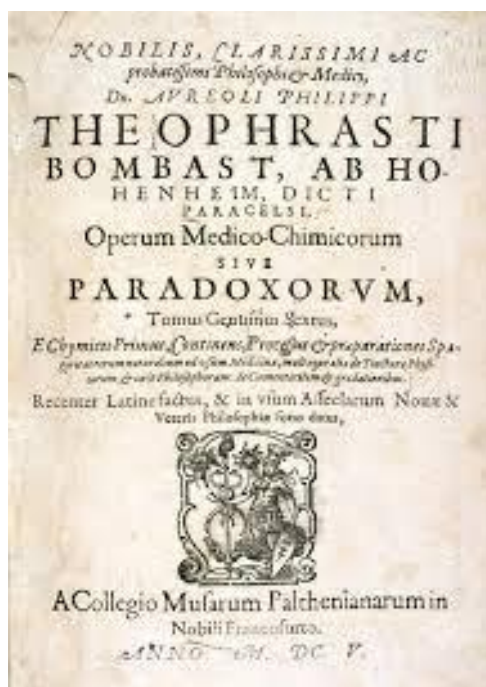


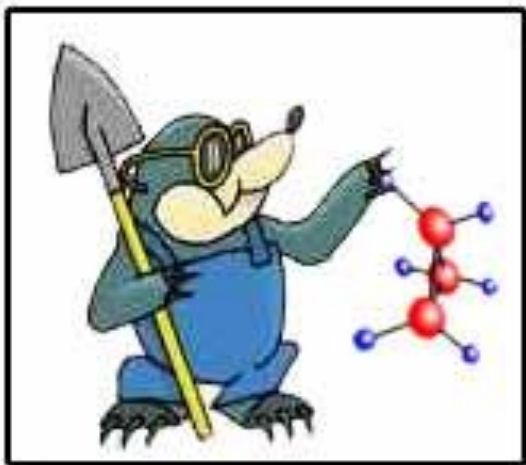
The Periodic Table

<div> <div> <div>1</div> <div>H</div> <div>1.01</div> </div> <div>2</div> <div>3</div> <div>4</div> <div>Li</div> <div>6.94</div> <div>Be</div> <div>9.01</div> </div>																	
<div> <div>5</div> <div>B</div> <div>10.8</div> <div>6</div> <div>C</div> <div>12</div> <div>7</div> <div>N</div> <div>14</div> <div>8</div> <div>O</div> <div>16</div> <div>9</div> <div>F</div> <div>18</div> <div>Ne</div> <div>20.2</div> </div>																	
<div> <div>13</div> <div>Al</div> <div>27</div> <div>14</div> <div>Si</div> <div>28.1</div> <div>15</div> <div>P</div> <div>31</div> <div>16</div> <div>S</div> <div>32.1</div> <div>17</div> <div>Cl</div> <div>35.5</div> <div>18</div> <div>Ar</div> <div>39.9</div> </div>																	
<div> <div>19</div> <div>K</div> <div>39.1</div> <div>20</div> <div>Ca</div> <div>40.1</div> <div>21</div> <div>Sc</div> <div>45</div> <div>22</div> <div>Ti</div> <div>47.9</div> <div>23</div> <div>V</div> <div>50.9</div> <div>24</div> <div>Cr</div> <div>52</div> <div>25</div> <div>Mn</div> <div>54.9</div> <div>26</div> <div>Fe</div> <div>55.8</div> <div>27</div> <div>Co</div> <div>58.9</div> <div>28</div> <div>Ni</div> <div>58.7</div> <div>29</div> <div>Cu</div> <div>63.5</div> <div>30</div> <div>Zn</div> <div>65.4</div> <div>31</div> <div>Ga</div> <div>69.7</div> <div>32</div> <div>Ge</div> <div>72.6</div> <div>33</div> <div>As</div> <div>74.9</div> <div>34</div> <div>Se</div> <div>79</div> <div>35</div> <div>Br</div> <div>79.9</div> <div>36</div> <div>Kr</div> <div>83.8</div> </div>																	
<div> <div>37</div> <div>Rb</div> <div>85.5</div> <div>38</div> <div>Sr</div> <div>87.6</div> <div>39</div> <div>Y</div> <div>88.9</div> <div>40</div> <div>Zr</div> <div>91.2</div> <div>41</div> <div>Nb</div> <div>92.9</div> <div>42</div> <div>Mo</div> <div>95.9</div> <div>43</div> <div>Tc</div> <div>98</div> <div>44</div> <div>Ru</div> <div>101</div> <div>45</div> <div>Rh</div> <div>103</div> <div>46</div> <div>Pd</div> <div>106</div> <div>47</div> <div>Ag</div> <div>108</div> <div>48</div> <div>Cd</div> <div>112</div> <div>49</div> <div>In</div> <div>115</div> <div>50</div> <div>Sn</div> <div>119</div> <div>51</div> <div>Sb</div> <div>122</div> <div>52</div> <div>Te</div> <div>126</div> <div>53</div> <div>I</div> <div>127</div> <div>54</div> <div>Xe</div> <div>131</div> </div>																	
<div> <div>55</div> <div>Cs</div> <div>133</div> <div>56</div> <div>Ba</div> <div>137</div> <div>57</div> <div>La</div> <div>139</div> <div>58</div> <div>Ce</div> <div>140</div> <div>59</div> <div>Pr</div> <div>141</div> <div>60</div> <div>Nd</div> <div>144</div> <div>61</div> <div>Pm</div> <div>145</div> <div>62</div> <div>Sm</div> <div>150</div> <div>63</div> <div>Eu</div> <div>152</div> <div>64</div> <div>Gd</div> <div>157</div> <div>65</div> <div>Tb</div> <div>159</div> <div>66</div> <div>Dy</div> <div>162</div> <div>67</div> <div>Ho</div> <div>165</div> <div>68</div> <div>Er</div> <div>167</div> <div>69</div> <div>Tm</div> <div>169</div> <div>70</div> <div>Yb</div> <div>173</div> <div>71</div> <div>Lu</div> <div>175</div> </div>																	
<div> <div>87</div> <div>Fr</div> <div>223</div> <div>88</div> <div>Ra</div> <div>226</div> <div>89</div> <div>Ac</div> <div>227</div> <div>90</div> <div>Th</div> <div>232</div> <div>91</div> <div>Pa</div> <div>231</div> <div>92</div> <div>U</div> <div>238</div> <div>93</div> <div>Np</div> <div>237</div> <div>94</div> <div>Pu</div> <div>244</div> <div>95</div> <div>Am</div> <div>243</div> <div>96</div> <div>Cm</div> <div>247</div> <div>97</div> <div>Bk</div> <div>247</div> <div>98</div> <div>Cf</div> <div>251</div> <div>99</div> <div>Es</div> <div>252</div> <div>100</div> <div>Fm</div> <div>257</div> <div>101</div> <div>Md</div> <div>258</div> <div>102</div> <div>No</div> <div>259</div> <div>103</div> <div>Lr</div> <div>262</div> </div>																	

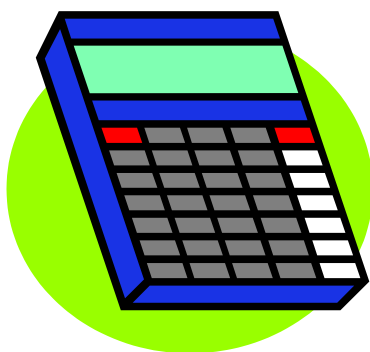


Formula Nomenclature



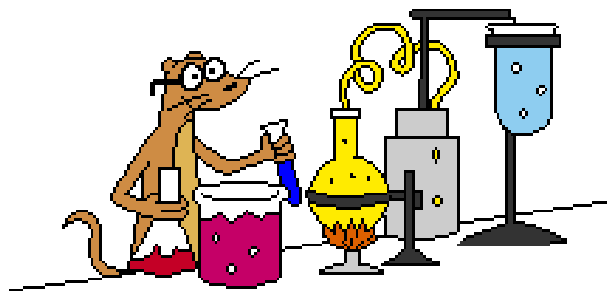


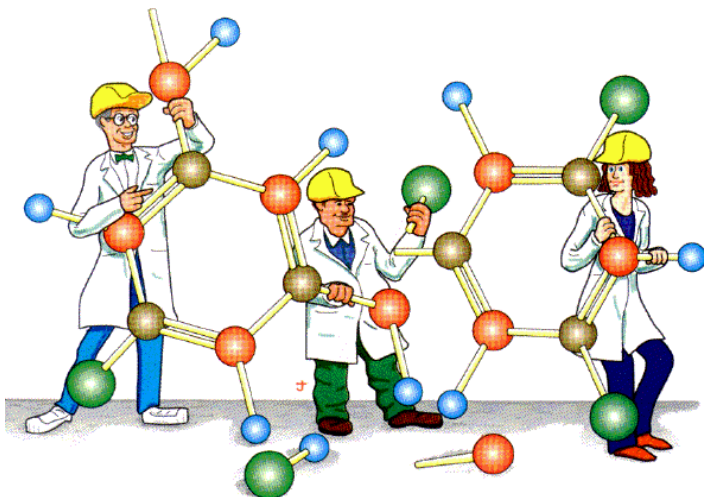
Formula Calculations





More Moles





Empirical Formulas





Balancing Equations





Chemical Reactions





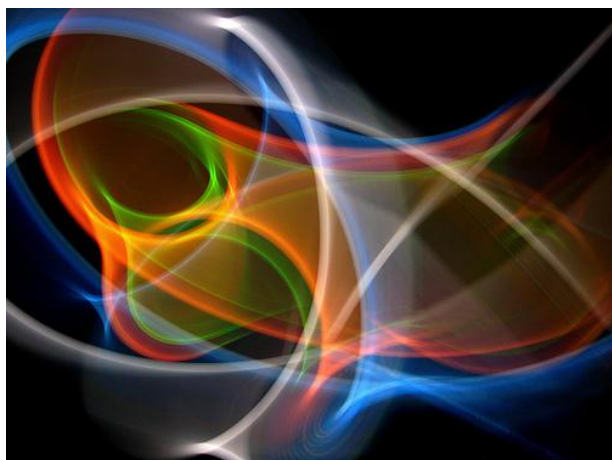
Stoichiometry





Calculating Yields





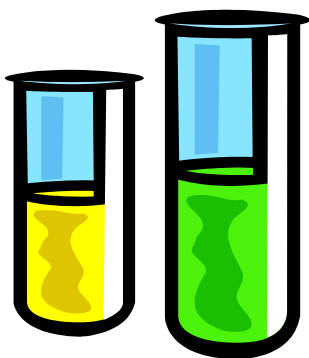
Gases





Gas Laws



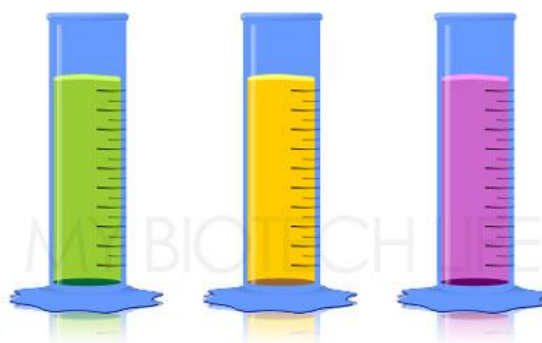


Solutions





Solution Calculations

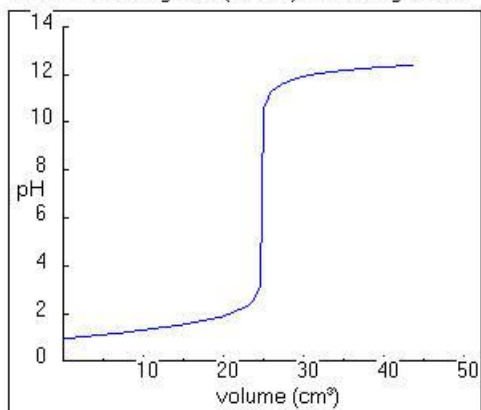




Titration



Titration of strong acid (25 cm³) with strong base.



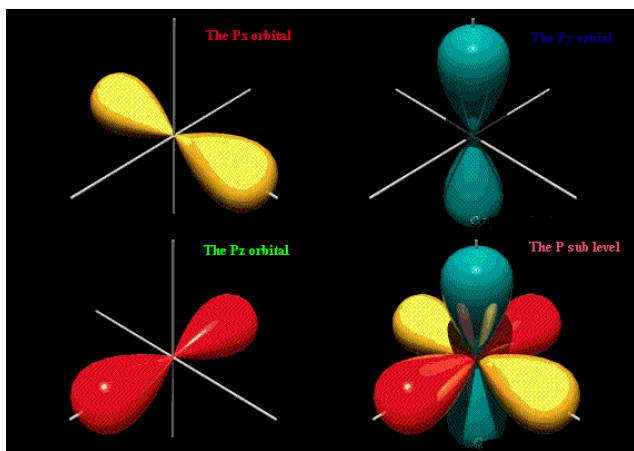
Titration Calculations





Acids & Bases



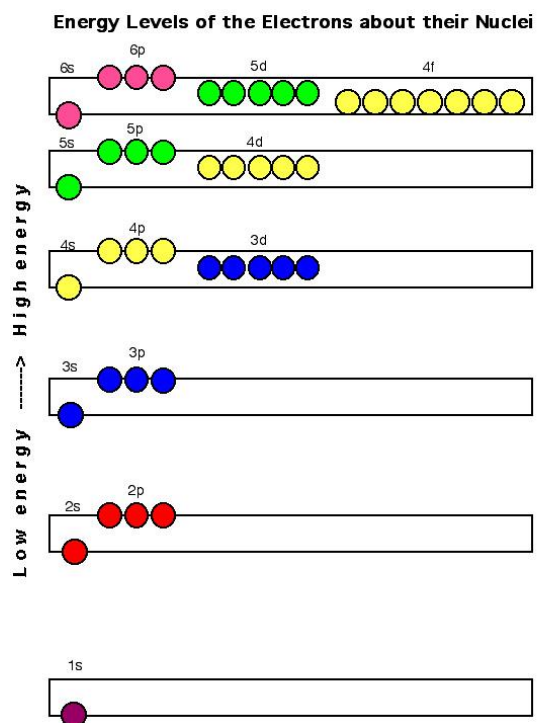


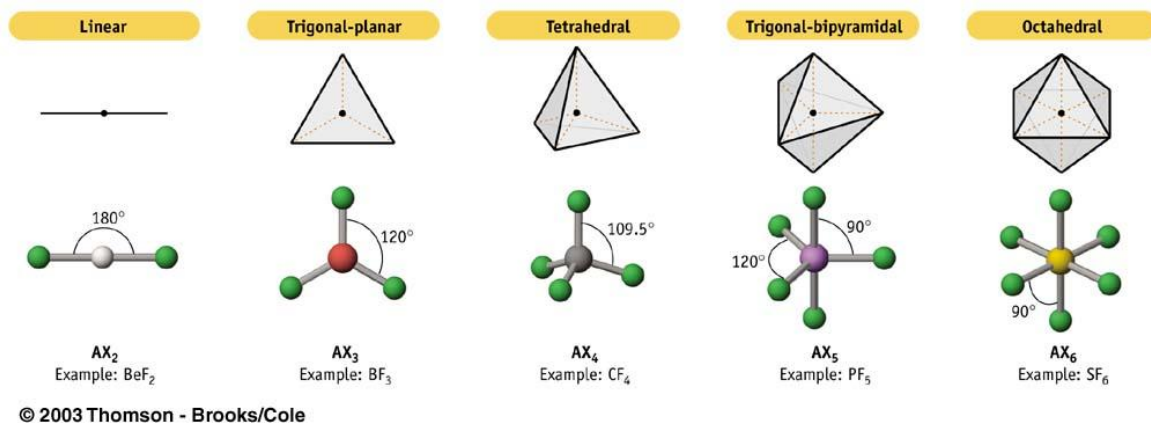
Atomic Theory

<small>26</small> <small>203</small>	H	<small>203 FT.</small> <small>61 m</small>	1
<small>26</small> <small>100</small>	He	<small>109 FT.</small> <small>36.5 m</small>	2
<small>26</small> <small>70</small>	Li Be	<small>70 FT.</small> <small>21.3 m</small>	3
<small>26</small> <small>50</small>	B C N	<small>50 FT.</small> <small>15.2 m</small>	4
<small>26</small> <small>40</small>	O F Ne Na	<small>40 FT.</small> <small>12.2 m</small>	5
<small>26</small> <small>30</small>	Mg Al Si P S	<small>30 FT.</small> <small>9.14 m</small>	6
<small>26</small> <small>25</small>	Cl Ar K Ca Sc Ti	<small>25 FT.</small> <small>7.62 m</small>	7
<small>26</small> <small>20</small>	V Cr Mn Fe Co Ni	<small>20 FT.</small> <small>6.10 m</small>	8
<small>26</small> <small>15</small>	Cu Zn Ga Ge As Se Br	<small>15 FT.</small> <small>4.57 m</small>	9
<small>26</small> <small>13</small>	Kr Rb Sr Y Zr Nb Mo	<small>13 FT.</small> <small>3.96 m</small>	10
<small>26</small> <small>10</small>	Tc Ru Rh Pd Ag Cd In Sn	<small>10 FT.</small> <small>3.05 m</small>	11



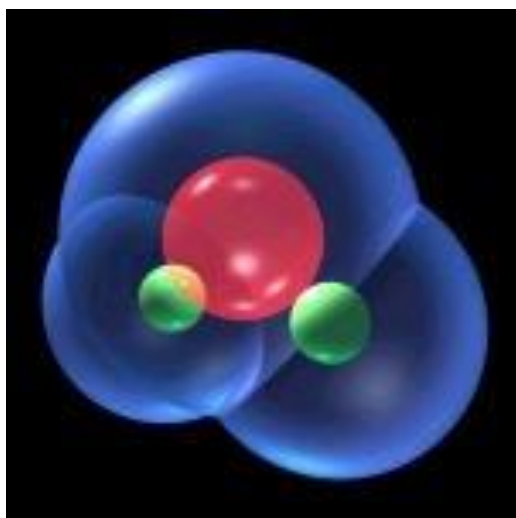
Electron Configuration Problems



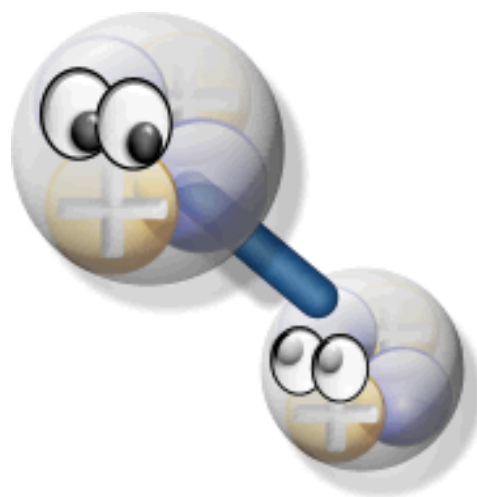


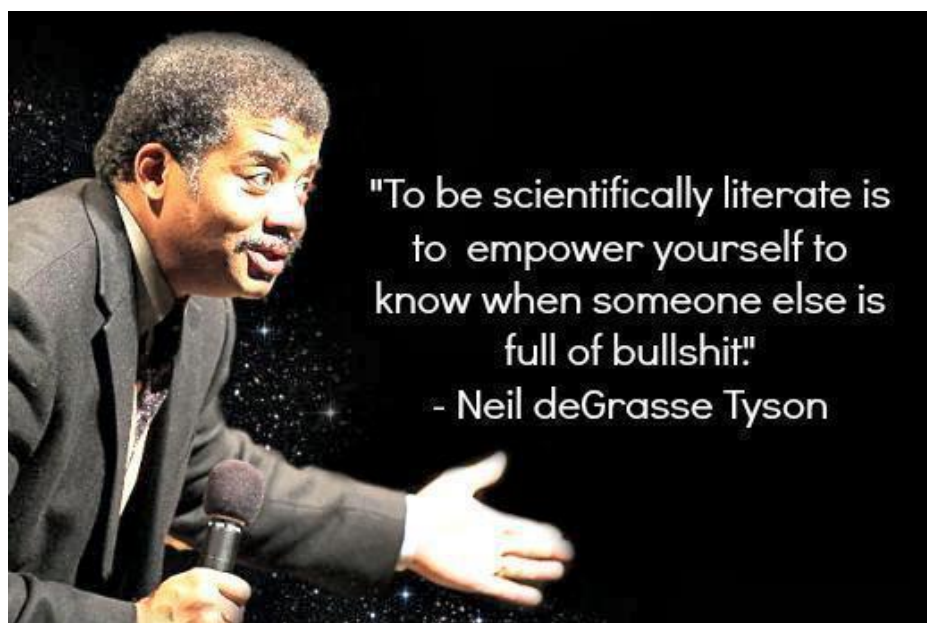
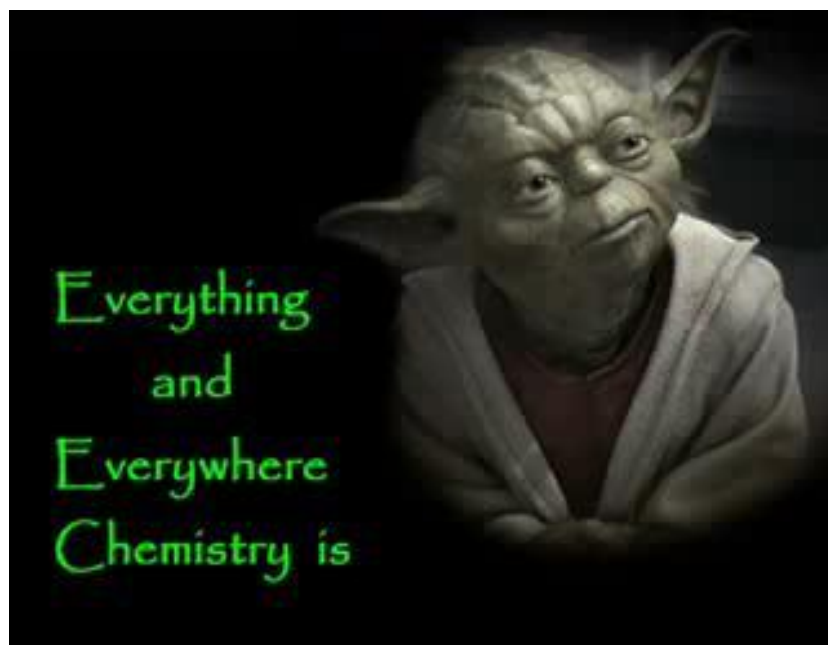
Lewis Dots

I	II											III	IV	V	VI	VII	0
H •																	He ••
Li •	•Be •											•B •	•C •	•N •	•O •	•F •	•Ne ••
Na •	•Mg •											•Al •	•Si •	•P •	•S •	•Cl •	•Ar ••
K •	•Ca •											•Ga •	•Ge •	•As •	•Se •	•Br •	•Kr ••
Rb •	•Sr •											•In •	•Sn •	•Sb •	•Te •	•I •	•Xe ••
Cs •	•Ba •											•Tl •	•Pb •	•Bi •	•Po •	•At •	•Rn ••



Bonding





Fini