




Periodic Table – Time to Color!

Glue the periodic table on the LAST (or BACK) page of your notebook (4C). You will need markers and colored pencils.

1																	18							
H 1.008	2																	2 He 4.0026						
<div>CLASSIFICATION KEY <input type="checkbox"/> METAL <input type="checkbox"/> NONMETAL <input type="checkbox"/> METALLOID</div>																		13	14	15	16	17	18	
3 Li 6.94	4 Be 9.0122																	5 B 10.81	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.180	
11 Na 22.990	12 Mg 24.305																	13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948	
<div>PHASE AT ROOM TEMPERATURE KEY <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS</div>																								
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798							
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29							
55 Cs 132.91	56 Ba 137.33	57-71 #	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)							
87 Fr (223)	88 Ra (226)	89-103 #	104 Rf (261)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)							
* Lanthanide series																								
			57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97							
# Actinide series																								
			89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)							

Follow each step to create your own coded table.

Part A: Let's classify the elements as METALS, NONMETALS, or METALLOIDS.

Metals	Nonmetals	Metalloids
 <p>Lead</p> <p>Tin</p> <p>Copper</p>	 <p>Iodine</p> <p>Sulfur</p> <p>Neon</p>	 <p>Boron</p> <p>Silicon</p> <p>Antimony</p>
<p>Metals are elements that are shiny and are good conductors of heat and electric current. They are <i>malleable</i>. (They can be hammered into thin sheets.) They are also <i>ductile</i>. (They can be drawn into thin wires.)</p>	<p>Nonmetals are elements that are dull (not shiny) and that are poor conductors of heat and electric current. Solids tend to be brittle and unmeltable. Few familiar objects are made of only nonmetals.</p>	<p>Metalloids are also called semiconductors. They have properties of both metals and nonmetals. Some metalloids are shiny. Some are dull. Metalloids are somewhat malleable and ductile. Some metalloids conduct heat and electric current as well.</p>

Source: http://images.slideplayer.com/26/8456696/slides/slide_9.jpg

Outline these boxes in RED and color the NONMETALS box in the key.

1 H 1.008	2 He 4.0026																
3 Li 6.94	4 Be 9.0122																
11 Na 22.990	12 Mg 24.305	13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948										
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57-71 * #	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89-103 #	104 Rf (265)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)
* Lanthanide series			57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97
# Actinide series			89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

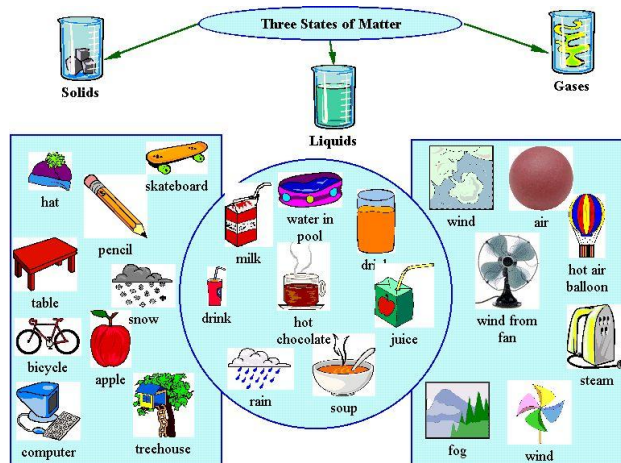
Outline these boxes in GREEN for METALS and color the key.

1 H 1.008	2 He 4.0026																
3 Li 6.94	4 Be 9.0122																
11 Na 22.990	12 Mg 24.305	13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948										
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57-71 * #	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89-103 #	104 Rf (265)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)
* Lanthanide series			57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97
# Actinide series			89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

Use BLUE to outline the boxes for the METALLOIDS and color the key.

1																		2																							
1 H 1.008																		2 He 4.0026																							
CLASSIFICATION KEY																																									
METAL									NONMETAL									METALLOID																							
PHASE AT ROOM TEMPERATURE KEY																																									
SOLID						LIQUID						GAS																													
3 Li 6.94		4 Be 9.0122																5 B 10.81		6 C 12.011		7 N 14.007		8 O 15.999		9 F 18.998		10 Ne 20.180													
11 Na 22.990		12 Mg 24.305																13 Al 26.982		14 Si 28.085		15 P 30.974		16 S 32.06		17 Cl 35.45		18 Ar 39.948													
19 K 39.098		20 Ca 40.078		21 Sc 44.956		22 Ti 47.867		23 V 50.942		24 Cr 51.996		25 Mn 54.938		26 Fe 55.845		27 Co 58.933		28 Ni 58.693		29 Cu 63.546		30 Zn 65.38		31 Ga 69.723		32 Ge 72.630		33 As 74.922		34 Se 78.97		35 Br 79.904		36 Kr 83.798							
37 Rb 85.468		38 Sr 87.62		39 Y 88.906		40 Zr 91.224		41 Nb 92.906		42 Mo 95.95		43 Tc (98)		44 Ru 101.07		45 Rh 102.91		46 Pd 106.42		47 Ag 107.87		48 Cd 112.41		49 In 114.82		50 Sn 118.71		51 Sb 121.76		52 Te 127.60		53 I 126.90		54 Xe 131.29							
55 Cs 132.91		56 Ba 137.33		57-71 *		72 Hf 178.49		73 Ta 180.95		74 W 183.84		75 Re 186.21		76 Os 190.23		77 Ir 192.22		78 Pt 195.08		79 Au 196.97		80 Hg 200.59		81 Tl 204.38		82 Pb 207.2		83 Bi 208.98		84 Po (209)		85 At (210)		86 Rn (222)							
87 Fr (223)		88 Ra (226)		89-103 #		104 Rf (265)		105 Db (268)		106 Sg (271)		107 Bh (270)		108 Hs (277)		109 Mt (276)		110 Ds (281)		111 Rg (280)		112 Cn (285)		113 Nh (286)		114 Fl (289)		115 Mc (289)		116 Lv (293)		117 Ts (294)		118 Og (294)							
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57 La 138.91		58 Ce 140.12		59 Pr 140.91		60 Nd 144.24		61 Pm (145)		62 Sm 150.36		63 Eu 151.96		64 Gd 157.25		65 Tb 158.93		66 Dy 162.50		67 Ho 164.93		68 Er 167.26		69 Tm 168.93		70 Yb 173.05		71 Lu 174.97													
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89 Ac (227)		90 Th 232.04		91 Pa 231.04		92 U 238.03		93 Np (237)		94 Pu (244)		95 Am (243)		96 Cm (247)		97 Bk (247)		98 Cf (251)		99 Es (252)		100 Fm (257)		101 Md (258)		102 No (259)		103 Lr (262)													

Part B: What's the phase?



Source: <http://www.learnnc.org/lp/media/lessons/indianajennette2112003807/ThreeStatesofMatter.jpg>

Draw a BLACK WATER DROPLET (or DOT) to show the elements that are LIQUID at room temperature.

1 H 1.008																	18 He 4.0026
<div>CLASSIFICATION KEY</div> <div>METAL NONMETAL METALLOID</div> <div>PHASE AT ROOM TEMPERATURE KEY</div> <div>SOLID LIQUID GAS</div>																	
3 Li 6.94	4 Be 9.0122											13 B 10.81	14 C 12.011	15 N 14.007	16 O 15.999	17 F 18.998	10 Ne 20.180
11 Na 22.990	12 Mg 24.305	3	4	5	6	7	8	9	10	11	12	13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
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Draw a RED BALLOON (or DOT) to show the elements that are GASES at room temperature.

1 H 1.008	2 He 4.0026																	18
3 Li 6.94	4 Be 9.0122																	10
11 Na 22.990	12 Mg 24.305	3	4	5	6	7	8	9	10	11	12	13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948	
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798	
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29	
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What about all the other elements? They are SOLIDS at room temperature and we will not mark those.

<div>CLASSIFICATION KEY</div> <div><div>METAL</div><div>NONMETAL</div><div>METALLOID</div></div> <div>PHASE AT ROOM TEMPERATURE KEY</div> <div><div>SOLID</div><div>LIQUID</div><div>GAS</div></div>																		<div>1</div> <div>H</div> <div>1.008</div>		<div>2</div> <div>He</div> <div>4.0026</div>																																			
<div>3</div> <div>Li</div> <div>6.94</div>		<div>4</div> <div>Be</div> <div>9.0122</div>																<div>13</div> <div>B</div> <div>10.81</div>		<div>14</div> <div>C</div> <div>12.011</div>		<div>15</div> <div>N</div> <div>14.007</div>		<div>16</div> <div>O</div> <div>15.999</div>		<div>17</div> <div>F</div> <div>18.998</div>		<div>18</div> <div>Ne</div> <div>20.180</div>																											
<div>11</div> <div>Na</div> <div>22.990</div>		<div>12</div> <div>Mg</div> <div>24.305</div>		<div>3</div>		<div>4</div>		<div>5</div>		<div>6</div>		<div>7</div>		<div>8</div>		<div>9</div>		<div>10</div>		<div>19</div> <div>K</div> <div>39.098</div>		<div>20</div> <div>Ca</div> <div>40.078</div>		<div>21</div> <div>Sc</div> <div>44.956</div>		<div>22</div> <div>Ti</div> <div>47.867</div>		<div>23</div> <div>V</div> <div>50.942</div>		<div>24</div> <div>Cr</div> <div>51.996</div>		<div>25</div> <div>Mn</div> <div>54.938</div>		<div>26</div> <div>Fe</div> <div>55.845</div>		<div>27</div> <div>Co</div> <div>58.933</div>		<div>28</div> <div>Ni</div> <div>58.693</div>		<div>29</div> <div>Cu</div> <div>63.546</div>		<div>30</div> <div>Zn</div> <div>65.38</div>		<div>31</div> <div>Ga</div> <div>69.723</div>		<div>32</div> <div>Ge</div> <div>72.630</div>		<div>33</div> <div>As</div> <div>74.922</div>		<div>34</div> <div>Se</div> <div>78.97</div>		<div>35</div> <div>Br</div> <div>79.904</div>		<div>36</div> <div>Kr</div> <div>83.796</div>	
<div>37</div> <div>Rb</div> <div>85.468</div>		<div>38</div> <div>Sr</div> <div>87.62</div>		<div>39</div> <div>Y</div> <div>88.906</div>		<div>40</div> <div>Zr</div> <div>91.224</div>		<div>41</div> <div>Nb</div> <div>92.906</div>		<div>42</div> <div>Mo</div> <div>95.95</div>		<div>43</div> <div>Tc</div> <div>(98)</div>		<div>44</div> <div>Ru</div> <div>101.07</div>		<div>45</div> <div>Rh</div> <div>102.91</div>		<div>46</div> <div>Pd</div> <div>106.42</div>		<div>47</div> <div>Ag</div> <div>107.87</div>		<div>48</div> <div>Cd</div> <div>112.41</div>		<div>49</div> <div>In</div> <div>114.82</div>		<div>50</div> <div>Sn</div> <div>118.71</div>		<div>51</div> <div>Sb</div> <div>121.76</div>		<div>52</div> <div>Te</div> <div>127.60</div>		<div>53</div> <div>I</div> <div>126.90</div>		<div>54</div> <div>Xe</div> <div>131.29</div>																					
<div>55</div> <div>Cs</div> <div>132.91</div>		<div>56</div> <div>Ba</div> <div>137.33</div>		<div>57-71</div> <div>*</div>		<div>72</div> <div>Hf</div> <div>178.49</div>		<div>73</div> <div>Ta</div> <div>180.95</div>		<div>74</div> <div>W</div> <div>183.84</div>		<div>75</div> <div>Re</div> <div>186.21</div>		<div>76</div> <div>Os</div> <div>190.23</div>		<div>77</div> <div>Ir</div> <div>192.22</div>		<div>78</div> <div>Pt</div> <div>195.08</div>		<div>79</div> <div>Au</div> <div>196.97</div>		<div>80</div> <div>Hg</div> <div>200.59</div>		<div>81</div> <div>Tl</div> <div>204.38</div>		<div>82</div> <div>Pb</div> <div>207.2</div>		<div>83</div> <div>Bi</div> <div>208.98</div>		<div>84</div> <div>Po</div> <div>(209)</div>		<div>85</div> <div>At</div> <div>(210)</div>		<div>86</div> <div>Rn</div> <div>(222)</div>																					
<div>87</div> <div>Fr</div> <div>(223)</div>		<div>88</div> <div>Ra</div> <div>(226)</div>		<div>89-103</div> <div>#</div>		<div>104</div> <div>Rf</div> <div>(265)</div>		<div>105</div> <div>Db</div> <div>(268)</div>		<div>106</div> <div>Sg</div> <div>(271)</div>		<div>107</div> <div>Bh</div> <div>(270)</div>		<div>108</div> <div>Hs</div> <div>(277)</div>		<div>109</div> <div>Mt</div> <div>(276)</div>		<div>110</div> <div>Ds</div> <div>(281)</div>		<div>111</div> <div>Rg</div> <div>(280)</div>		<div>112</div> <div>Cn</div> <div>(285)</div>		<div>113</div> <div>Nh</div> <div>(286)</div>		<div>114</div> <div>Fl</div> <div>(289)</div>		<div>115</div> <div>Mc</div> <div>(289)</div>		<div>116</div> <div>Lv</div> <div>(293)</div>		<div>117</div> <div>Ts</div> <div>(294)</div>		<div>118</div> <div>Og</div> <div>(294)</div>																					
* Lanthanide series																		<div>57</div> <div>La</div> <div>138.91</div>		<div>58</div> <div>Ce</div> <div>140.12</div>		<div>59</div> <div>Pr</div> <div>140.91</div>		<div>60</div> <div>Nd</div> <div>144.24</div>		<div>61</div> <div>Pm</div> <div>(145)</div>		<div>62</div> <div>Sm</div> <div>150.36</div>		<div>63</div> <div>Eu</div> <div>151.96</div>		<div>64</div> <div>Gd</div> <div>157.25</div>		<div>65</div> <div>Tb</div> <div>158.93</div>		<div>66</div> <div>Dy</div> <div>162.50</div>		<div>67</div> <div>Ho</div> <div>164.93</div>		<div>68</div> <div>Er</div> <div>167.26</div>		<div>69</div> <div>Tm</div> <div>168.93</div>		<div>70</div> <div>Yb</div> <div>173.05</div>		<div>71</div> <div>Lu</div> <div>174.97</div>									
# Actinide series																		<div>89</div> <div>Ac</div> <div>(227)</div>		<div>90</div> <div>Th</div> <div>232.04</div>		<div>91</div> <div>Pa</div> <div>231.04</div>		<div>92</div> <div>U</div> <div>238.03</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>									

Part C: Element Families or Groups

Elements are organized into families (also called groups) based on the number of valence electrons they have, which determines their reactivity and other properties.

Source: <http://f.tqn.com/y/chemistry/1/W/J/V/2/186810031.jpg>

You will need COLORED PENCILS as well as a PEN to label each column.
Be sure to shade LIGHTLY so you can still see the text!

Group #1 – Alkali Metals → GREEN (Don't color H!)

Alkali Metals

↓

1 2

1 H 1.008 2 He 4.0026

3 Li 6.94 4 Be 9.0122

11 Na 22.990 12 Mg 24.305

19 K 39.098 20 Ca 40.078 21 Sc 44.956 22 Ti 47.867 23 V 50.942 24 Cr 51.996 25 Mn 54.938 26 Fe 55.845 27 Co 58.933 28 Ni 58.693 29 Cu 63.546 30 Zn 65.38 31 Ga 69.723 32 Ge 72.630 33 As 74.922 34 Se 78.97 35 Br 79.904 36 Kr 83.796

37 Rb 85.468 38 Sr 87.62 39 Y 88.906 40 Zr 91.224 41 Nb 92.906 42 Mo 95.95 (98) 43 Tc 101.07 44 Ru 101.07 45 Rh 102.91 46 Pd 106.42 47 Ag 107.87 48 Cd 112.41 49 In 114.82 50 Sn 118.71 51 Sb 121.76 52 Te 127.60 53 I 126.90 54 Xe 131.29

55 Cs 132.91 56 Ba 137.33 57-71 * 72 Hf 178.49 73 Ta 180.95 74 W 183.84 75 Re 186.21 76 Os 190.23 77 Ir 192.22 78 Pt 195.08 79 Au 196.97 80 Hg 200.59 81 Tl 204.38 82 Pb 207.2 83 Bi 208.98 (209) 84 Po (209) 85 At (210) 86 Rn (222)

87 Fr (223) 88 Ra (226) 89-103 # 104 Rf (265) 105 Db (268) 106 Sg (271) 107 Bh (270) 108 Hs (277) 109 Mt (276) 110 Ds (281) 111 Rg (280) 112 Cn (285) 113 Nh (286) 114 Fl (289) 115 Mc (289) 116 Lv (293) 117 Ts (294) 118 Og (294)

CLASSIFICATION KEY

METAL (green) NONMETAL (red) METALLOID (blue)

PHASE AT ROOM TEMPERATURE KEY

SOLID (white) LIQUID (black) GAS (red)

* Lanthanide series

Actinide series

57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
138.91	140.12	140.91	144.24	(145)	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05	174.97

89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr
(227)	232.04	231.04	238.03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(262)

Group #2 – Alkaline Earth Metals → BLUE

Alkali Metals

↓

Alkaline Earth Metals

↓

1 2

1 H 1.008 2 He 4.0026

3 Li 6.94 4 Be 9.0122

11 Na 22.990 12 Mg 24.305

19 K 39.098 20 Ca 40.078 21 Sc 44.956 22 Ti 47.867 23 V 50.942 24 Cr 51.996 25 Mn 54.938 26 Fe 55.845 27 Co 58.933 28 Ni 58.693 29 Cu 63.546 30 Zn 65.38 31 Ga 69.723 32 Ge 72.630 33 As 74.922 34 Se 78.97 35 Br 79.904 36 Kr 83.796

37 Rb 85.468 38 Sr 87.62 39 Y 88.906 40 Zr 91.224 41 Nb 92.906 42 Mo 95.95 (98) 43 Tc 101.07 44 Ru 101.07 45 Rh 102.91 46 Pd 106.42 47 Ag 107.87 48 Cd 112.41 49 In 114.82 50 Sn 118.71 51 Sb 121.76 52 Te 127.60 53 I 126.90 54 Xe 131.29

55 Cs 132.91 56 Ba 137.33 57-71 * 72 Hf 178.49 73 Ta 180.95 74 W 183.84 75 Re 186.21 76 Os 190.23 77 Ir 192.22 78 Pt 195.08 79 Au 196.97 80 Hg 200.59 81 Tl 204.38 82 Pb 207.2 83 Bi 208.98 (209) 84 Po (209) 85 At (210) 86 Rn (222)

87 Fr (223) 88 Ra (226) 89-103 # 104 Rf (265) 105 Db (268) 106 Sg (271) 107 Bh (270) 108 Hs (277) 109 Mt (276) 110 Ds (281) 111 Rg (280) 112 Cn (285) 113 Nh (286) 114 Fl (289) 115 Mc (289) 116 Lv (293) 117 Ts (294) 118 Og (294)

CLASSIFICATION KEY

METAL (green) NONMETAL (red) METALLOID (blue)

PHASE AT ROOM TEMPERATURE KEY

SOLID (white) LIQUID (black) GAS (red)

* Lanthanide series

Actinide series

57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
138.91	140.12	140.91	144.24	(145)	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05	174.97

89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr
(227)	232.04	231.04	238.03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(262)

Groups #3-12 – Transition Metals → NO COLOR (Just label!)

Alkali Metals

Alkaline Earth Metals

Transition Metals (Groups 3-12)

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

11

Na

22.990

12

Mg

24.305

19

K

39.098

20

Ca

40.078

37

Rb

85.468

38

Sr

87.62

55

Cs

132.91

56

Ba

137.33

87

Fr

(223)

88

Ra

(226)

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

Al

26.982

34

Si

28.085

13

B

10.81

14

C

12.011

15

N

14.007

16

O

15.999

17

F

18.998

18

Ne

20.180

13

Al

26.982

14

Si

28.085

15

P

30.974

16

S

32.06

17

Cl

35.45

18

Ar

39.948

31

Ga

69.723

32

Ge

72.630

33

As

74.922

34

Se

78.97

35

Br

79.904

36

Kr

83.798

49

In

114.82

50

Sn

118.71

51

Sb

121.76

52

Te

127.60

53

I

126.90

54

Xe

131.29

81

Tl

204.38

82

Pb

207.2

83

Bi

208.98

84

Po

(209)

85

At

(210)

86

Rn

(222)

104

Rf

(265)

105

Db

(268)

106

Sg

(271)

107

Bh

(270)

108

Hs

(277)

109

Mt

(276)

110

Ds

(281)

111

Rg

(280)

112

Cn

(285)

113

Nh

(286)

114

Fl

(289)

115

Mc

(289)

116

Lv

(293)

117

Ts

(294)

118

Og

(294)

57

La

138.91

58

Ce

140.12

59

Pr

140.91

60

Nd

144.24

61

Pm

(145)

62

Sm

150.36

63

Eu

151.96

64

Gd

157.25

65

Tb

158.93

66

Dy

162.50

67

Ho

164.93

68

Er

167.26

69

Tm

168.93

70

Yb

173.05

71

Lu

174.97

89

Ac

(227)

90

Th

232.04

91

Pa

231.04

92

U

238.03

93

Np

(237)

94

Pu

(244)

95

Am

(243)

96

Cm

(247)

97

Bk

(247)

98

Cf

(251)

99

Es

(252)

100

Fm

(257)

101

Md

(258)

102

No

(259)

103

Lr

(262)

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

11

Na

22.990

12

Mg

24.305

19

K

39.098

20

Ca

40.078

37

Rb

85.468

38

Sr

87.62

55

Cs

132.91

56

Ba

137.33

87

Fr

(223)

88

Ra

(226)

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

Al

26.982

34

Si

28.085

13

B

10.81

14

C

12.011

15

N

14.007

16

O

15.999

17

F

18.998

18

Ne

20.180

13

Al

26.982

14

Si

28.085

15

P

30.974

16

S

32.06

17

Cl

35.45

18

Ar

39.948

31

Ga

69.723

32

Ge

72.630

33

As

74.922

34

Se

78.97

35

Br

79.904

36

Kr

83.798

49

In

114.82

50

Sn

118.71

51

Sb

121.76

52

Te

127.60

53

I

126.90

54

Xe

131.29

81

Tl

204.38

82

Pb

207.2

83

Bi

208.98

84

Po

(209)

85

At

(210)

86

Rn

(222)

104

Rf

(265)

105

Db

(268)

106

Sg

(271)

107

Bh

(270)

108

Hs

(277)

109

Mt

(276)

110

Ds

(281)

111

Rg

(280)

112

Cn

(285)

113

Nh

(286)

114

Fl

(289)

115

Mc

(289)

116

Lv

(293)

117

Ts

(294)

118

Og

(294)

57

La

138.91

58

Ce

140.12

59

Pr

140.91

60

Nd

144.24

61

Pm

(145)

62

Sm

150.36

63

Eu

151.96

64

Gd

157.25

65

Tb

158.93

66

Dy

162.50

67

Ho

164.93

68

Er

167.26

69

Tm

168.93

70

Yb

173.05

71

Lu

174.97

89

Ac

(227)

90

Th

232.04

91

Pa

231.04

92

U

238.03

93

Np

(237)

94

Pu

(244)

95

Am

(243)

96

Cm

(247)

97

Bk

(247)

98

Cf

(251)

99

Es

(252)

100

Fm

(257)

101

Md

(258)

102

No

(259)

103

Lr

(262)

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

11

Na

22.990

12

Mg

24.305

19

K

39.098

20

Ca

40.078

37

Rb

85.468

38

Sr

87.62

55

Cs

132.91

56

Ba

137.33

87

Fr

(223)

88

Ra

(226)

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

Al

26.982

34

Si

28.085

13

B

10.81

14

C

12.011

15

N

14.007

16

O

15.999

17

F

18.998

18

Ne

20.180

13

Al

26.982

14

Si

28.085

15

P

30.974

16

S

32.06

17

Cl

35.45

18

Ar

39.948

31

Ga

69.723

32

Ge

72.630

33

As

74.922

34

Se

78.97

35

Br

79.904

36

Kr

83.798

49

In

114.82

50

Sn

118.71

51

Sb

121.76

52

Te

127.60

53

I

126.90

54

Xe

131.29

81

Tl

204.38

82

Pb

207.2

83

Bi

208.98

84

Po

(209)

85

At

(210)

86

Rn

(222)

104

Rf

(265)

105

Db

(268)

106

Sg

(271)

107

Bh

(270)

108

Hs

(277)

109

Mt

(276)

110

Ds

(281)

111

Rg

(280)

112

Cn

(285)

113

Nh

(286)

114

Fl

(289)

115

Mc

(289)

116

Lv

(293)

117

Ts

(294)

118

Og

(294)

57

La

138.91

58

Ce

140.12

59

Pr

140.91

60

Nd

144.24

61

Pm

(145)

62

Sm

150.36

63

Eu

151.96

64

Gd

157.25

65

Tb

158.93

66

Dy

162.50

67

Ho

164.93

68

Er

167.26

69

Tm

168.93

70

Yb

173.05

71

Lu

174.97

89

Ac

(227)

90

Th

232.04

91

Pa

231.04

92

U

238.03

93

Np

(237)

94

Pu

(244)

95

Am

(243)

96

Cm

(247)

97

Bk

(247)

98

Cf

(251)

99

Es

(252)

100

Fm

(257)

101

Md

(258)

102

No

(259)

103

Lr

(262)

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

11

Na

22.990

12

Mg

24.305

19

K

39.098

20

Ca

40.078

37

Rb

85.468

38

Sr

87.62

55

Cs

132.91

56

Ba

137.33

87

Fr

(223)

88

Ra

(226)

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

Al

26.982

34

Si

28.085

Group #13 – Boron Family → ORANGE

Alkali Metals

Alkaline Earth Metals

Transition Metals (Groups 3-12)

Boron Family

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

CLASSIFICATION KEY

PHASE AT ROOM TEMPERATURE KEY

1 H 1.008	2 He 4.0026																									
3 Li 6.94	4 Be 9.0122											13 B 10.81	14 C 12.011	15 N 14.007	16 O 15.999	17 F 18.998	18 Ne 20.180									
11 Na 22.990	12 Mg 24.305											13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948									
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798									
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29									
55 Cs 132.91	56 Ba 137.33	57-71 *	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)									
87 Fr (223)	88 Ra (226)	89-103 #	104 Rf (265)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)									
												65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97								
												89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

* Lanthanide series

Actinide series

Group #14 – Carbon Family → RED

Alkali Metals

Alkaline Earth Metals

Transition Metals (Groups 3-12)

Boron Family

Carbon Family

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

5

B

10.81

6

C

12.011

7

N

14.007

8

O

15.999

9

F

18.998

10

Ne

20.180

11

Na

22.990

12

Mg

24.305

13

Al

26.982

14

Si

28.085

15

P

30.974

16

S

32.06

17

Cl

35.45

18

Ar

39.948

19

K

39.098

20

Ca

40.078

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

As

74.922

34

Se

78.97

35

Br

79.904

36

Kr

83.798

37

Rb

85.468

38

Sr

87.62

39

Y

88.906

40

Zr

91.224

41

Nb

92.906

42

Mo

95.95

43

Tc

(98)

44

Ru

101.07

45

Rh

102.91

46

Pd

106.42

47

Ag

107.87

48

Cd

112.41

49

In

114.82

50

Sn

118.71

51

Sb

121.76

52

Te

127.60

53

I

126.90

54

Xe

131.29

55

Cs

132.91

56

Ba

137.33

57-71

*

72

Hf

178.49

73

Ta

180.95

74

W

183.84

75

Re

186.21

76

Os

190.23

77

Ir

192.22

78

Pt

195.08

79

Au

196.97

80

Hg

200.59

81

Tl

204.38

82

Pb

207.2

83

Bi

208.98

84

Po

(209)

85

At

(210)

86

Rn

(222)

87

Fr

(223)

88

Ra

(226)

89-103

#

104

Rf

(265)

105

Db

(268)

106

Sg

(271)

107

Bh

(270)

108

Hs

(277)

109

Mt

(276)

110

Ds

(281)

111

Rg

(280)

112

Cn

(285)

113

Nh

(286)

114

Fl

(289)

115

Mc

(289)

116

Lv

(293)

117

Ts

(294)

118

Og

(294)

57

La

138.91

58

Ce

140.12

59

Pr

140.91

60

Nd

144.24

61

Pm

(145)

62

Sm

150.36

63

Eu

151.96

64

Gd

157.25

65

Tb

158.93

66

Dy

162.50

67

Ho

164.93

68

Er

167.26

69

Tm

168.93

70

Yb

173.05

71

Lu

174.97

89

Ac

(227)

90

Th

232.04

91

Pa

231.04

92

U

238.03

93

Np

(237)

94

Pu

(244)

95

Am

(243)

96

Cm

(247)

97

Bk

(247)

98

Cf

(251)

99

Es

(252)

100

Fm

(257)

101

Md

(258)

102

No

(259)

103

Lr

(262)

CLASSIFICATION KEY

PHASE AT ROOM TEMPERATURE KEY

Alkali Metals

Alkaline Earth Metals

Transition Metals (Groups 3-12)

Boron Family

Carbon Family

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

5

B

10.81

6

C

12.011

7

N

14.007

8

O

15.999

9

F

18.998

10

Ne

20.180

11

Na

22.990

12

Mg

24.305

13

Al

26.982

14

Si

28.085

15

P

30.974

16

S

32.06

17

Cl

35.45

18

Ar

39.948

19

K

39.098

20

Ca

40.078

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

As

74.922

34

Se

78.97

35

Br

79.904

36

Kr

83.798

37

Rb

85.468

38

Sr

87.62

39

Y

88.906

40

Zr

91.224

41

Nb

92.906

42

Mo

95.95

43

Tc

(98)

44

Ru

101.07

45

Rh

102.91

46

Pd

106.42

47

Ag

107.87

48

Cd

112.41

49

In

114.82

50

Sn

118.71

51

Sb

121.76

52

Te

127.60

53

I

126.90

54

Xe

131.29

55

Cs

132.91

56

Ba

137.33

57-71

*

72

Hf

178.49

73

Ta

180.95

74

W

183.84

75

Re

186.21

76

Os

190.23

77

Ir

192.22

78

Pt

195.08

79

Au

196.97

80

Hg

200.59

81

Tl

204.38

82

Pb

207.2

83

Bi

208.98

84

Po

(209)

85

At

(210)

86

Rn

(222)

87

Fr

(223)

88

Ra

(226)

89-103

#

104

Rf

(265)

105

Db

(268)

106

Sg

(271)

107

Bh

(270)

108

Hs

(277)

109

Mt

(276)

110

Ds

(281)

111

Rg

(280)

112

Cn

(285)

113

Nh

(286)

114

Fl

(289)

115

Mc

(289)

116

Lv

(293)

117

Ts

(294)

118

Og

(294)

57

La

138.91

58

Ce

140.12

59

Pr

140.91

60

Nd

144.24

61

Pm

(145)

62

Sm

150.36

63

Eu

151.96

64

Gd

157.25

65

Tb

158.93

66

Dy

162.50

67

Ho

164.93

68

Er

167.26

69

Tm

168.93

70

Yb

173.05

71

Lu

174.97

89

Ac

(227)

90

Th

232.04

91

Pa

231.04

92

U

238.03

93

Np

(237)

94

Pu

(244)

95

Am

(243)

96

Cm

(247)

97

Bk

(247)

98

Cf

(251)

99

Es

(252)

100

Fm

(257)

101

Md

(258)

102

No

(259)

103

Lr

(262)

CLASSIFICATION KEY

PHASE AT ROOM TEMPERATURE KEY

Alkali Metals

Alkaline Earth Metals

Transition Metals (Groups 3-12)

Boron Family

Carbon Family

1

H

1.008

2

He

4.0026

3

Li

6.94

4

Be

9.0122

5

B

10.81

6

C

12.011

7

N

14.007

8

O

15.999

9

F

18.998

10

Ne

20.180

11

Na

22.990

12

Mg

24.305

13

Al

26.982

14

Si

28.085

15

P

30.974

16

S

32.06

17

Cl

35.45

18

Ar

39.948

19

K

39.098

20

Ca

40.078

21

Sc

44.956

22

Ti

47.867

23

V

50.942

24

Cr

51.996

25

Mn

54.938

26

Fe

55.845

27

Co

58.933

28

Ni

58.693

29

Cu

63.546

30

Zn

65.38

31

Ga

69.723

32

Ge

72.630

33

As

74.922

34

Se

78.97

35

Br

79.904

36

Kr

83.798

37

Rb

85.468

38

Sr

87.62

39

Y

88.906

40

Zr

91.224

41

Nb

92.906

42

Mo

95.95

43

Tc

(98)

44

Ru

101.07

45

Rh

102.91

46

Pd

106.42

47

Ag

107.87

48

Cd

112.41

49

In

114.82

50

Sn

118.71

51

Sb

121.76

52

Te

127.60

53

I

126.90

54

Xe

131.29

55

Cs

132.91

56

Ba

137.33

57-71

*

72

Hf

178.49

73

Ta

180.95

74

W

183.84

75

Re

186.21

76

Os

190.23

77

Ir

192.22

78

Pt

195.08

79

Au

196.97

80

Hg

200.59

81

Tl

204.38

82

Pb

207.2

83

Bi

208.98

84

Po

(209)

85

At

(210)

86

Rn

(222)

87

Fr

(223)

88

Ra

(226)

89-103

#

104

Rf

(265)

105

Db

(268)

106

Sg

(271)

107

Bh

(270)

108

Hs

(277)

109

Mt

(276)

110

Ds

(281)

111

Rg

(280)

112

Cn

(285)

113

Nh

(286)

114

Fl

(289)

115

Mc

(289)

116

Lv

(293)

117

Ts

(294)

118

Og

(294)

57

La

138.91

58

Ce

140.12

59

Pr

140.91

60

Nd

144.24

61

Pm

(145)

62

Sm

150.36

63

Eu

151.96

64

Gd

157.25

65

Tb

158.93

66

Dy

162.50

67

Ho

164.93

68

Er

167.26

69

Tm

168.93

70

Yb

173.05

71

Lu

174.97

89

Ac

(227)

90

Th

232.04

91

Pa

231.04

92

U

238.03

93

Np

(237)

94

Pu

(244)

95

Am

(243)

96

Cm

(247)

97

Bk

(247)

98

Cf

(251)

99

Es

(252)

100

Fm

(257)

101

Md

(258)

102

No

(259)

103

Lr

(262)

CLASSIFICATION KEY

PHASE AT ROOM TEMPERATURE KEY

Group #15 – Nitrogen Family → BROWN

Alkali Metals		Alkaline Earth Metals		Transition Metals (Groups 3-12)									Boron Family		Carbon Family		Nitrogen Family		18															
1 H 1.008		2 He 4.0026											13 B 10.81		14 C 12.011		15 N 14.007		16 O 15.999		17 F 18.998		18 Ne 20.180											
3 Li 6.94		4 Be 9.0122											13 Al 26.982		14 Si 28.085		15 P 30.974		16 S 32.06		17 Cl 35.45		18 Ar 39.948											
11 Na 22.990		12 Mg 24.305		3 Sc 44.956	4 Ti 47.867	5 V 50.942	6 Cr 51.996	7 Mn 54.938	8 Fe 55.845	9 Co 58.933	10 Ni 58.693	11 Cu 63.546	12 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798															
19 K 39.098		20 Ca 40.078		21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29															
37 Rb 85.468		38 Sr 87.62		39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)															
55 Cs 132.91		56 Ba 137.33		57-71 *	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)															
87 Fr (223)		88 Ra (226)		89-103 #	104 Rf (265)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)															
* Lanthanide series				<table> <tr> <td>57 La 138.91</td> <td>58 Ce 140.12</td> <td>59 Pr 140.91</td> <td>60 Nd 144.24</td> <td>61 Pm (145)</td> <td>62 Sm 150.36</td> <td>63 Eu 151.96</td> <td>64 Gd 157.25</td> <td>65 Tb 158.93</td> <td>66 Dy 162.50</td> <td>67 Ho 164.93</td> <td>68 Er 167.26</td> <td>69 Tm 168.93</td> <td>70 Yb 173.05</td> <td>71 Lu 174.97</td> </tr> </table>																57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97
57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97																				
# Actinide series				<table> <tr> <td>89 Ac (227)</td> <td>90 Th 232.04</td> <td>91 Pa 231.04</td> <td>92 U 238.03</td> <td>93 Np (237)</td> <td>94 Pu (244)</td> <td>95 Am (243)</td> <td>96 Cm (247)</td> <td>97 Bk (247)</td> <td>98 Cf (251)</td> <td>99 Es (252)</td> <td>100 Fm (257)</td> <td>101 Md (258)</td> <td>102 No (259)</td> <td>103 Lr (262)</td> </tr> </table>																89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)
89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)																				

Group #16 – Oxygen Family (Chalcogens) → PINK

Periodic Table highlighting Group #16 (Oxygen Family/Chalcogens) in pink. The table includes element symbols, atomic numbers, and names. Key families are labeled: Alkali Metals, Alkaline Earth Metals, Transition Metals (Groups 3-12), Boron Family, Carbon Family, Nitrogen Family, Oxygen Family (Chalcogen), and Halogens.

CLASSIFICATION KEY

- METAL (Green)
- NONMETAL (Red)
- METALLOID (Blue)

PHASE AT ROOM TEMPERATURE KEY

- SOLID (White box)
- LIQUID (Black circle)
- GAS (Red circle)

Group #16 Elements (Chalcogens):

- 2: He (4.0026)
- 8: O (15.999)
- 16: S (32.06)
- 34: Se (78.97)
- 52: Te (127.6)
- 84: Po (209)

Lanthanide series:

57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
138.91	140.12	140.91	144.24	(145)	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05	174.97

Actinide series:

89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr
(227)	232.04	231.04	238.03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(262)

Group #17 – Halide Family → PURPLE

Periodic Table highlighting Group #17 (Halide Family) in purple. The table includes element symbols, atomic numbers, and names. Key families are labeled: Alkali Metals, Alkaline Earth Metals, Transition Metals (Groups 3-12), Boron Family, Carbon Family, Nitrogen Family, Oxygen Family (Chalcogen), and Halogens (Halides).

CLASSIFICATION KEY

- METAL (Green)
- NONMETAL (Red)
- METALLOID (Blue)

PHASE AT ROOM TEMPERATURE KEY

- SOLID (White box)
- LIQUID (Black circle)
- GAS (Red circle)

Group #17 Elements (Halogens):

- 9: F (18.998)
- 17: Cl (35.45)
- 35: Br (79.904)
- 53: I (126.90)
- 85: At (210)

Lanthanide series:

57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
138.91	140.12	140.91	144.24	(145)	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05	174.97

Actinide series:

89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr
(227)	232.04	231.04	238.03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(262)

Group #18 – Noble Gases → YELLOW

Group #18 – Noble Gases → YELLOW

Alkali Metals
↓

Alkaline Earth Metals
↓

Transition Metals (Groups 3-12)
↓

Boron Family
↓

Nitrogen Family
↓

Carbon Family
↓

Oxygen Family (Chalcogen)
↓

Halogens (Halides)
↓

Noble Gases
↓

CLASSIFICATION KEY
METAL (Green) NONMETAL (Red) METALLOID (Blue)

PHASE AT ROOM TEMPERATURE KEY
SOLID (Square) LIQUID (Drop) GAS (Bubble)

1 H 1.008	2 He 4.0026																
3 Li 6.94	4 Be 9.0122											5 B 10.81	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.180
11 Na 22.990	12 Mg 24.305											13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57-71 *	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89-103 #	104 Rf (261)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (296)

* Lanthanide series

57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97
--------------------	--------------------	--------------------	--------------------	-------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------

Actinide series

89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)
-------------------	--------------------	--------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	--------------------	--------------------	--------------------	--------------------

Part D: Periods (Rows)

Each row in the table is called a PERIOD. All the elements in a row have the same number of energy levels.



Source: http://images.slideplayer.com/18/5702901/slides/slide_1.jpg

8th – The rows in the table make up PERIODS. Label each one with the number of energy levels it has.

Alkali Metals Alkaline Earth Metals Transition Metals (Groups 3-12) Boron Family Carbon Family Nitrogen Family Oxygen Family (Chalcogen) Halogens (Halides) Noble Gases

1 2 3 4 5 6 7

CLASSIFICATION KEY
 METAL (green) NONMETAL (red) METALLOID (blue)
 PHASE AT ROOM TEMPERATURE KEY
 SOLID (square) LIQUID (circle) GAS (triangle)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 H 1.008	2 He 4.0026																
3 Li 6.94	4 Be 9.0122											5 B 10.81	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.180
11 Na 22.990	12 Mg 24.305											13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57-71 * Lanthanide series	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89-103 * Actinide series	104 Rf (261)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)
57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97			
89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)			

Does your table resemble this one?

Alkali Metals Alkaline Earth Metals Transition Metals (Groups 3-12) Boron Family Carbon Family Nitrogen Family Oxygen Family (Chalcogen) Halogens (Halides) Noble Gases

1 2 3 4 5 6 7

CLASSIFICATION KEY
 METAL (green) NONMETAL (red) METALLOID (blue)
 PHASE AT ROOM TEMPERATURE KEY
 SOLID (square) LIQUID (circle) GAS (triangle)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 H 1.008	2 He 4.0026																
3 Li 6.94	4 Be 9.0122											5 B 10.81	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.180
11 Na 22.990	12 Mg 24.305											13 Al 26.982	14 Si 28.085	15 P 30.974	16 S 32.06	17 Cl 35.45	18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.97	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.95	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57-71 * Lanthanide series	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89-103 * Actinide series	104 Rf (261)	105 Db (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (289)	116 Lv (293)	117 Ts (294)	118 Og (294)
57 La 138.91	58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.05	71 Lu 174.97			
89 Ac (227)	90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)			