**# of orbitals # of e-   
in a “set” in the set**

**IONS**

**1A 8A**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hydrogen  **1**  **H**  1.01 | **2A** |  | **Alkali metals Alkaline earth metals Transition metals Other metals**  **Metalloids (semi-metal)** | | | Element name  Symbol | | | Mercury  **80**  **Hg** | | Atomic # | | **3A** | **4A** | **5A** | **6A** | **7A** | Helium  **2**  **He**  4.00 |
| Lithium | Beryllium |  | **Nonmetals**  **Halogens Noble gases**  **3B 4B** | | **5B** | **6B** | **7B** | **8B** | 200.  **9B 10B** | | Avg. Mass  **11B 12B** | | Boron | Carbon | Nitrogen | Oxygen | Fluorine | Neon |
| **3** | **4** |  | **5** | **6** | **7** | **8** | **9** | **10** |
| **Li** | **Be** |  | **B** | **C** | **N** | **O** | **F** | **Ne** |
| 6.94 | 9.01 |  | 10.81 | 12.01 | 14.01 | 16.00 | 19.00 | 20.18 |
| Sodium | Magnesium |  | Aluminum | Silicon | Phosphorus | Sulfur | Chlorine | Argon |
| **11** | **12** |  | **13** | **14** | **15** | **16** | **17** | **18** |
| **Na** | **Mg** |  | **Al** | **Si** | **P** | **S** | **Cl** | **Ar** |
| 22.99 | 24.31 |  | 26.98 | 28.09 | 30.97 | 32.07 | 35.45 | 39.95 |
| Potassium | Calcium |  | Scandium | Titanium | Vanadium | Chromium | Manganese | Iron | Cobalt | Nickel | Copper | Zinc | Gallium | Germanium | Arsenic | Selenium | Bromine | Krypton |
| **19**  **K**  39.10 | **20**  **Ca**  40.08 |  | **21**  **Sc**  44.96 | **22**  **Ti**  47.88 | **23**  **V**  50.94 | **24**  **Cr**  52.00 | **25**  **Mn**  54.94 | **26**  **Fe**  55.85 | **27**  **Co**  58.93 | **28**  **Ni**  58.69 | **29**  **Cu**  63.55 | **30**  **Zn**  65.39 | **31**  **Ga**  69.72 | **32**  **Ge**  72.61 | **33**  **As**  74.92 | **34**  **Se**  78.96 | **35**  **Br**  79.90 | **36**  **Kr**  83.80 |
| Rubidium | Strontium |  | Yttrium | Zirconium | Niobium | Molybdenum | Technetium | Ruthenium | Rhodium | Palladium | Silver | Cadmium | Indium | Tin | Antimony | Tellurium | Iodine | Xenon |
| **37** | **38** |  | **39** | **40** | **41** | **42** | **43** | **44** | **45** | **46** | **47** | **48** | **49** | **50** | **51** | **52** | **53** | **54** |
| **Rb** | **Sr** |  | **Y** | **Zr** | **Nb** | **Mo** | **Tc** | **Ru** | **Rh** | **Pd** | **Ag** | **Cd** | **In** | **Sn** | **Sb** | **Te** | **I** | **Xe** |
| 85.47 | 87.62 |  | 88.91 | 91.22 | 92.91 | 95.94 | (98) | 101.07 | 102.91 | 106.42 | 107.87 | 112.41 | 114.82 | 118.71 | 121.76 | 127.60 | 126.90 | 131.29 |
| Cesium | Barium |  | Lanthanum | Hafnium | Tantalum | Tungsten | Rhenium | Osmium | Iridium | Platinum | Gold | Mercury | Thallium | Lead | Bismuth | Polonium | Astatine | Radon |
| **55**  **Cs**  132.91 | **56**  **Ba**  137.33 |  | **57**  **La**  138.91  **\*** | **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**  207.20 | **83**  **Bi**  208.98 | **84**  **Po**  (209) | **85**  **At**  (210) | **86**  **Rn**  (222) |
| Francium | Radium |  | Actinium  **89**  **Ac**  (277)  **\*\*** | Rutherfordium | Dubnium | Seaborgium | Bohrium | Hassium | Meitnerium | Darmstadtium | Roentgenium | Copernicium | Nihonium | Flerovium | Moscovium | Livermorium | Tennessine | Oganesson |
| **87**  **Fr**  (223) | **88**  **Ra**  (226) |  | **104**  **Rf**  (267) | **105**  **Db**  (268) | **106**  **Sg**  (271) | **107**  **Bh**  (272) | **108**  **Hs**  (270) | **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) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **\*** | Cerium  **58**  **Ce**  140.12 | Praseodymium  **59**  **Pr**  140.91 | Neodymium  **60**  **Nd**  144.24 | Promethium  **61**  **Pm**  (145) | Samarium  **62**  **Sm**  150.36 | Europium  **63**  **Eu**  151.97 | Gadolinium  **64**  **Gd**  157.25 | Terbium  **65**  **Tb**  158.93 | Dysprosium  **66**  **Dy**  162.50 | Holmium  **67**  **Ho**  164.93 | Erbium  **68**  **Er**  167.26 | Thulium  **69**  **Tm**  168.93 | Ytterbium  **70**  **Yb**  173.04 | Lutetium  **71**  **Lu**  174.97 |
| **\*\*** | Thorium  **90**  **Th**  232.04 | Protactinium  **91**  **Pa**  231.04 | Uranium  **92**  **U**  238.03 | Neptunium  **93**  **Np**  (237) | Plutonium  **94**  **Pu**  (244) | Americium  **95**  **Am**  (243) | Curium  **96**  **Cm**  (247) | Berkelium  **97**  **Bk**  (247) | Californium  **98**  **Cf**  (251) | Einsteinium  **99**  **Es**  (252) | Fermium  **100**  **Fm**  (257) | Mendelevium  **101**  **Md**  (258) | Nobelium  **102**  **No**  (259) | Lawrencium  **103**  **Lr**  (262) |

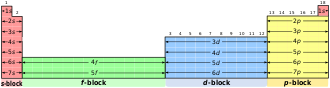
\*lanthanides

**Go back to d-block!**

\*\*actinides

Trick for writing electron configurations so you don’t have to use an orbital diagram!

*Glue this half down into your notebook   
AFTER we finish labeling it!*



N-12