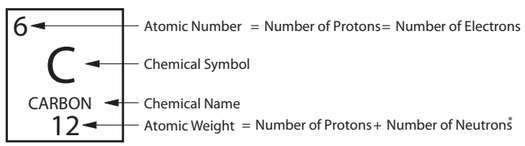
Periodic Table
Diagram that shows all the element's information; grouped in rows by increasing atomic mass

→ **Period**
The row of a periodic table (like a calendar row = a week) all elements in a row follow a pattern

→ **Group**
Column of a periodic table (sometimes called a family) It is usually named for the first element in the column (like the nitrogen family)

Chemical Symbol
Way to describe each element in one or two letters (carbon = c, oxygen = o, iron = fe, etc.)



Scientific Theory
Well-tested idea that explains and connects obervations by scientists

→ **Dalton's Atomic Theory**
Elements composed of atoms that cannot be divided; atoms of same element alike; elements cannot change into each other; compounds have different elements in a ratio

Particle Accelerator
Powerful machines that move nucleus materials faster and faster until they reach high speeds - usually to collide with another atom

Nuclear Fusion
Process where two atoms nuclei combine to form a larger nucleus - creates heavier elements

→ **Nebula**
Cloudlike region of gases (form when a huge star produces elements through fusion)

Supernova
Huge explosion that breaks apart a massive star, can create temps of 1 billion degrees celsius, generated heavier elements

FOUR PROPERTIES OF METALS

Reactivity
Ease and speed with which an element combines (or reacts) with other elements and compounds

Corrosion
Destruction of metal (for example, iron is oxidized by oxygen)

Malleable
Metal that can be hammered or rolled into flat sheets or other shapes

Ductile
Metal that can be pulled out or drawn into long wire (copper is both malleable and ductile)

Conductive
Ability for the object to transfer heat or electricity to another object (most metals are good conductors)

Shininess
visual property of something that shines with reflected light

Hydrogen can be placed with either halogens...
(requires only 1 electron to achieve stable valence shell)
...or placed with Alkali Metals
(can lose an electron to achieve stable valence shell)

Alkali Metals

Alkali Earth Metals
Metals in a group (column of periodic table) that react with other elements by losing "one" electron

Transition Metals
Elements in groups 3-12 that are good conductors and not very reactive (gold does not rust) Most are shiny and hard

Metalloids
Elements that have some characteristics of metals and nonmetals -- are solids at room temperature and conduct electricity

Lacks most of the properties of a metal (poor conductor of electricity and heat and are reactive with other elements)

Non-Metals

Means salt forming -- are the elements of Group 17 (all are very reactive and dangerous to humans if in pure form)

Halogens

Noble Gas
Elements in Group 18 -- do not normally form compounds -- do not gain, lose or share electrons (unreactive)

Semiconductor
Substances that conduct electricity under some conditions, but not others (used to make computer chips - for example, silicon)

KEY
- = Solid at room temperature
- = Liquid at room temperature
- = Gas at room temperature
- = Radioactive
- = Artificially Made

1 H HYDROGEN 1																	2 He HELIUM 4
3 Li LITHIUM 7	4 Be BERYLLIUM 9											5 B BORON 11	6 C CARBON 12	7 N NITROGEN 14	8 O OXYGEN 16	9 F FLUORINE 19	10 Ne NEON 20
11 Na SODIUM 23	12 Mg MAGNESIUM 24											13 Al ALUMINUM 27	14 Si SILICON 28	15 P PHOSPHORUS 31	16 S SULFUR 32	17 Cl CHLORINE 35	18 Ar ARGON 40
19 K POTASSIUM 39	20 Ca CALCIUM 40	21 Sc SCANDIUM 45	22 Ti TITANIUM 48	23 V VANADIUM 51	24 Cr CHROMIUM 52	25 Mn MANGANESE 55	26 Fe IRON 56	27 Co COBALT 59	28 Ni NICKEL 59	29 Cu COPPER 64	30 Zn ZINC 65	31 Ga GALLIUM 70	32 Ge GERMANIUM 73	33 As ARSENIC 75	34 Se SELENIUM 79	35 Br BROMINE 80	36 Kr KRYPTON 84
37 Rb RUBIDIUM 85	38 Sr STRONTIUM 88	39 Y YTTRIUM 89	40 Zr ZIRCONIUM 91	41 Nb NIOBIUM 93	42 Mo MOLYBDENUM 96	43 Tc TECHNETIUM 98	44 Ru RUTHENIUM 101	45 Rh RHODIUM 103	46 Pd PALLADIUM 106	47 Ag SILVER 108	48 Cd CADMIUM 112	49 In INDIUM 115	50 Sn TIN 119	51 Sb ANTIMONY 122	52 Te TELLURIUM 128	53 I IODINE 127	54 Xe XENON 131
55 Cs CESIUM 133	56 Ba BARIUM 137	72 Hf HAFNIUM 178	73 Ta TANTALUM 181	74 W TUNGSTEN 184	75 Re RHENIUM 186	76 Os OSMIUM 190	77 Ir IRIDIUM 192	78 Pt PLATINUM 195	79 Au GOLD 197	80 Hg MERCURY 201	81 Tl THALLIUM 204	82 Pb LEAD 207	83 Bi BISMUTH 209	84 Po POLONIUM 209	85 At ASTATINE 210	86 Rn RADON 222	
87 Fr FRANCIUM 223	88 Ra RADIUM 226	104 Rf RUTHERFORDIUM 267	105 Db DUBNIUM 268	106 Sg SEABORGIUM 271	107 Bh BOHRIUM 272	108 Hs HASSIUM 277	109 Mt MEITNERIUM 276	110 Ds DARMSTADTIUM 281	111 Rg ROENTGENIUM 280	112 Cn COPERNICIUM 285	113 Uut UNUNTRIUM 284	114 Fl FLERVIUM 289	115 Uup UNUNPENTIUM 288	116 Lv LIVERMORIUM 291	117 Uus UNUNSEPTIUM NOT YET OBSERVED	118 Uuo UNUNOCTIUM 294	

14 Si SILICON 28

Other Metals

Lenthanide
Top row of elements located under the periodic table - a mixture of a metal with at least one other element (usually another metal)

Actinide
Bottom row of elements located under periodic table - some are found in the earth, some are created in a lab (lab ones are unstable)

57 La LANTHANUM 139	58 Ce CERIUM 140	59 Pr PRASEODYMIUM 141	60 Nd NEODYMIUM 144	61 Pm PROMETHIUM 145	62 Sm SAMARIUM 150	63 Eu EUROPIUM 152	64 Gd GADOLINIUM 157	65 Tb TERBIUM 159	66 Dy DYSPROSIUM 163	67 Ho HOLMIUM 165	68 Er ERBIUM 167	69 Tm THULIUM 169	70 Yb YTTERBIUM 173	71 Lu LUTETIUM 175
89 Ac ACTINIUM 227	90 Th THORIUM 232	91 Pa PROTACTINIUM 231	92 U URANIUM 238	93 Np NEPTUNIUM 237	94 Pu PLUTONIUM 244	95 Am AMERICIUM 243	96 Cm CURIUM 247	97 Bk BERKELIUM 247	98 Cf CALIFORNIUM 251	99 Es EINSTEINIUM 252	100 Fm FERMIUM 257	101 Md MENDELEVIUM 258	102 No NOBELIUM 259	103 Lr LAWRENCIUM 262

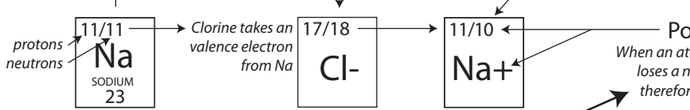
Rare Earth Metals

Synthetic Element
Elements after uranium that are made (nuclear particles are forced to crash into each other)

Valence Electrons
Electrons that have most energy in an atom and are held most loosely to the nucleus

Sodium has 1 (of the 11) valence electrons

Sodium tranfers the 1 valence electron



Positive Ion
When an atom loses an electron, it loses a negative charge and therefore becomes positive

ION
Atom or group of atoms that has an electric charge

Negative Ion
When an atom gains an electron, it gains a negative charge and therefore becomes negative

Polyatomic Ion
Ions that are made from more than one atom (poly means many)

Covalent Bound
Chemical bond where two atoms share electrons (usually nonmetals make a colalent bond)

Ionic Bond
An attraction between two oppositely charged atoms (attraction between positive and nagative ions)

Ionic Compound Properties
They have hard brittle crystals and high melting points

Ionic Compound
Compound that consists of positive and negative ions

Naming Ionic Compound
Name of positive ion first, followed by the negative
NH_4NO_3

Double Bond
Two atoms share two pairs of electrons (CO_2 - carbon forms a double bond with each of two oxygen atoms)

Triple Bond
Atoms share 3 pairs of electrons