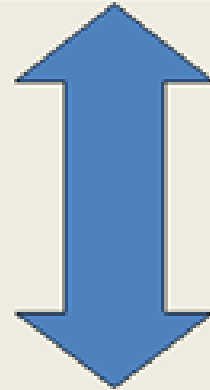


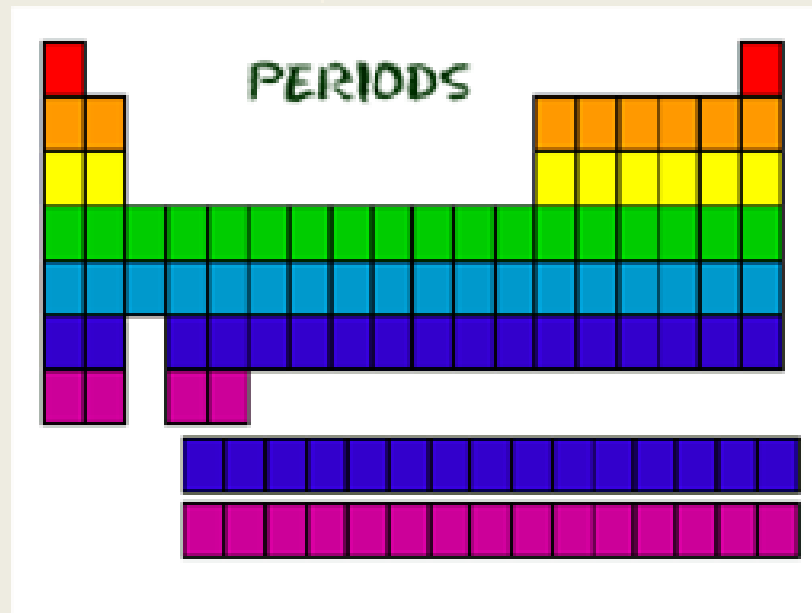
The Periodic Table

- Groups

- Periods



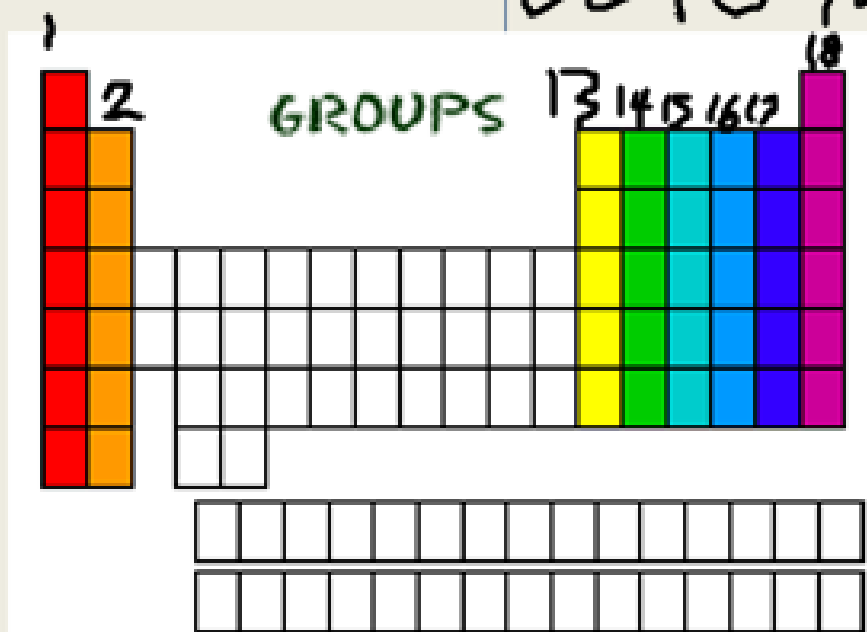
- **Period:** indicates the number of shells of an element



- **Group/family:** indicates the number of electrons on the valence shell



Valence Shell \rightarrow
 Outer most shell



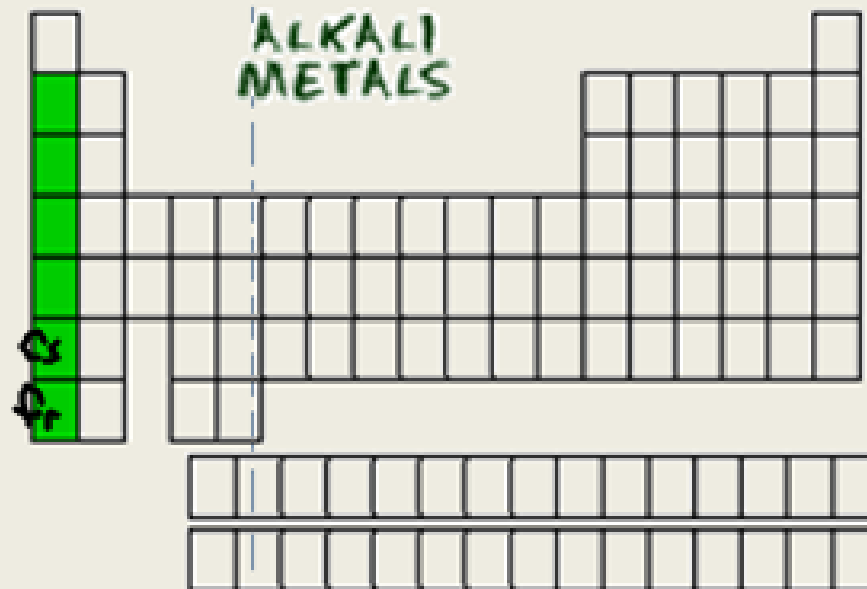
13 \rightarrow 3 valence e^-

14 \rightarrow 4 valence e^-

Group 1 – Alkaline metals



- The most reactive group of elements
- Reactivity increases as you move down the group
- *Cs and Fr are liquids; all others are solid*



Group 3 - 12 - Transition Metals

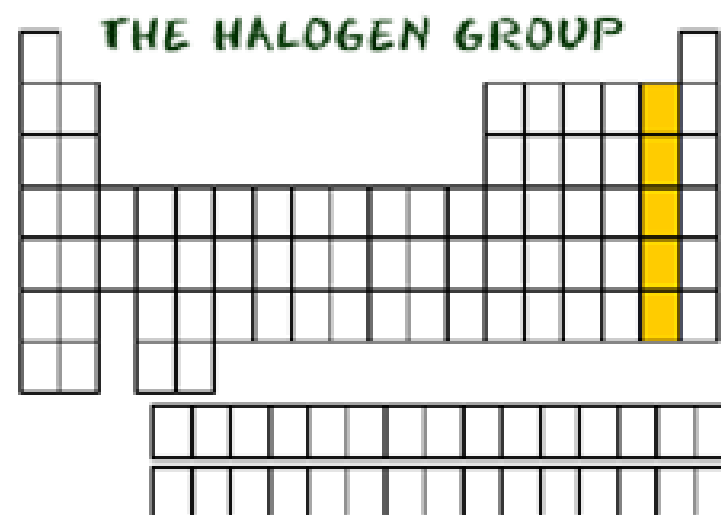


- *Less reactive metals*
- *Not as predictable as other metals*
- *Have a wide variety of properties*
- *Hg is the only liquid; all others are solid*

1 H																	2 He												
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne												
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar												
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr												
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe												
55 Cs	56 Ba											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			
87 Fr	88 Ra	89 Ac	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn												
(119)	(120)	(121)	(122)	(123)	(124)	(125)	(126)	(127)	(128)	(129)	(130)	(131)	(132)	(133)	(134)	(135)	(136)	(137)	(138)	(139)	(140)	(141)	(142)	(143)	(144)	(145)	(146)	(147)	(148)
LANTHANIDES		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														
ACTINIDES		88 Th	89 Pa	90 U	91 Np	92 Pu	93 Am	94 Cm	95 Bk	96 Cf	97 Es	98 Fm	99 Md	100 No	101 Lr														

Group 17 - Halogens

- Very reactive nonmetals
- Fluorine is the most reactive
 - this decreases as you move down the group
- F and Cl are gas; Br is liquid; I and At are solid



Group 18 – Noble Gasses

- *Extremely low chemical reactivity or inert (very stable)*
- *Used in common items such as neon signs or balloons*
- *All are gas*

1	2											3	4	5	6	7	0
																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															

 Noble gases

Lanthanides & Actinides



- *Lanthanides: atomic numbers 57 – 71 (top row)*
- *Actinides: atomic numbers 89 – 103 (bottom row)*
- *All solid*

Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
58	59	60	61	62	63	64	65	66	67	68	69	70	71
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
90	91	92	93	94	95	96	97	98	99	100	101	102	103