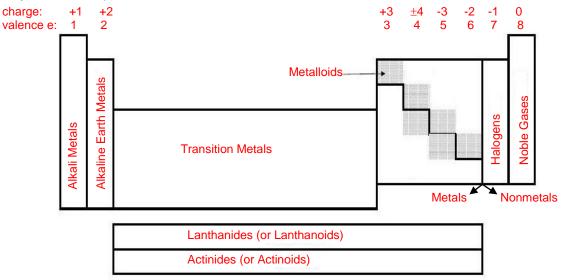
Historical Development and Periodic Table Basics

- How did Mendeleev arrange the periodic table? Increasing atomic mass
- How did Moseley arrange the periodic table? Increasing atomic number
- 3) How is the modern periodic table arranged? Increasing atomic number
- 4) Define **periodic law**. When elements are arranged by atomic number, their physical and chemical properties show a periodic (repeating) pattern.
- Label the families of the periodic table. Write the number of valence electrons and charges at the top of each family in the s and p blocks.



- 6) What is another name for a column on the periodic table? Group, family row? period
- 7) What are some properties of metals? high luster (shiny), malleable, ductile, good conductor of heat & electricity
- 8) What are some properties of nonmetals? dull, brittle, not malleable or ductile, poor conductor
- 9) A semiconductor is a material that needs to be a good conductor but not heat up very much, or be a good insulator. Would metals, nonmetals, or metalloids make a better semiconductor? Why? Metals are good conductors but they would get too hot (not a good insulator). Nonmetals are poor conductors, although they would not heat up very much (good insulator). A metalloid, like silicon, is a good conductor of electricity but does not get too hot.

Applications of the Periodic Table

- 10) What are valence electrons? Electrons in the highest energy level.
- 11) Define the octet rule. Atoms are stable when they have 8 valence electrons (full s & p sublevels)
- 12) Write the electron configuration for S-2 1s22s2p63s23p6
- 13) Write the electron configuration for Li⁺¹ 1s²
- 14) Write the electron configuration for Mg⁺² 1s²2s²2p⁶
- 15) Write the electron configuration for N⁻³ 1s²2s²2p⁶
- 16) An element has the electron configuration 1s²2s²2p⁶3s²3p⁵.
 - a. What charge would it be likely to form? -1
- 17) An element has the electron configuration 1s²2s²2p⁶3s²3p⁶4s².
 - a. What charge would it be likely to form? +2
- 18) How many valence electrons do the following elements have?
 - a.Oxygen 6
 - b. Bromine 7
- - c. Magnesium 2

- d. Sodium 1
- e. Neon 8
- f. Aluminum 3

- Carbon 4
- Helium 2
- Phosphorus 5
- 19) Why do elements in a group have similar properties? same number of valence electrons

- 20) Which elements have the same properties as fluorine?

 O, C, CI, Br, Ne, He, I Mg, Cs, Ar, Ca, Li, Fr
- 22) Which elements have the same properties as neon? F, He, N, Ar, H, Kr, Nb
- 23) What family contains the least reactive elements? Noble gases

Periodic Trends

- 24) What is the key word for the definition of ionization energy? remove
- 25) What is the key word for the definition of electronegativity? attract
- 26) Atomic radius is like how big the atom is (the distance from the nucleus to the outermost electrons).
- 27) WORD BANK: negative, decreases, positive, cation, increases, anion

When an atom	Its charge becomes	It is called a(n)	Its size
Gains electrons	Negative	Anion	Increases
Loses electrons	Positive	Cation	Decreases

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Fo	<i>r the follow</i> 28) F	ing prol	blems, circle the atom (29	with the la	_	atomic radius:	30) Ni ⁺¹	Ni ⁺²
31)) Put in orde	r from si	mallest to largest ionic si	ze: X ⁺² , :	X ⁻³ , X	-1, X, X ⁺¹	, <u>—</u>	
			X ⁺² < X ⁺¹ <	x < x	; -1 ≺	X-3		
32)) Which list (a) Mg, Al,		of elements that have the b) K, Ca, and			nical properties? Mg, Ca, and Ba		d) K, Al, and Ni
Fo	r the follow	ing prol	blems, circle the atom	with the la	rgest :	atomic radius:		
33) <u>Al</u>	Cl	34) Al	Ī	<u>n</u>	3	5) <u>Rb</u>	Sr
Fo	r the follow	ing prol	blems, circle the atom	with the la	rgest	ionization energ	y:	
36) B	N	37) <u>5</u>	S	ie .	3	8) Sn	Ī
Fo	r the follow	ing prol	blems, circle the atom	with the la	ırgest	electronegativity	<i>/:</i>	
39) <u>Na</u>	Rb	40) K	<u>C</u>	<u>a</u>	4	1) <u>5</u>	Ar