

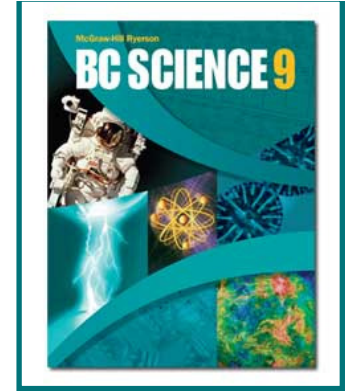
These notes are posted on my site for the following reasons:

- **for students to copy in their own hand-writing**
 - **in order to complete their class notes**
 - **if student did not have enough time in class**
 - **if student was away and missed this section**
- **for assistants and tutors to follow progress of the concepts taught**

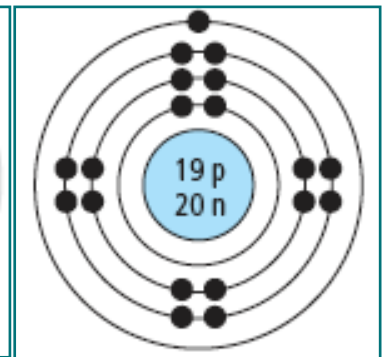
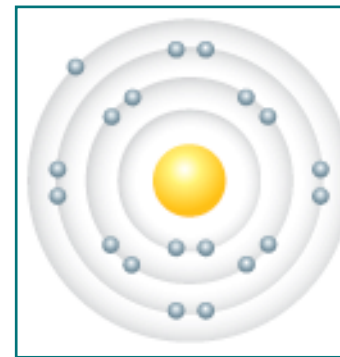
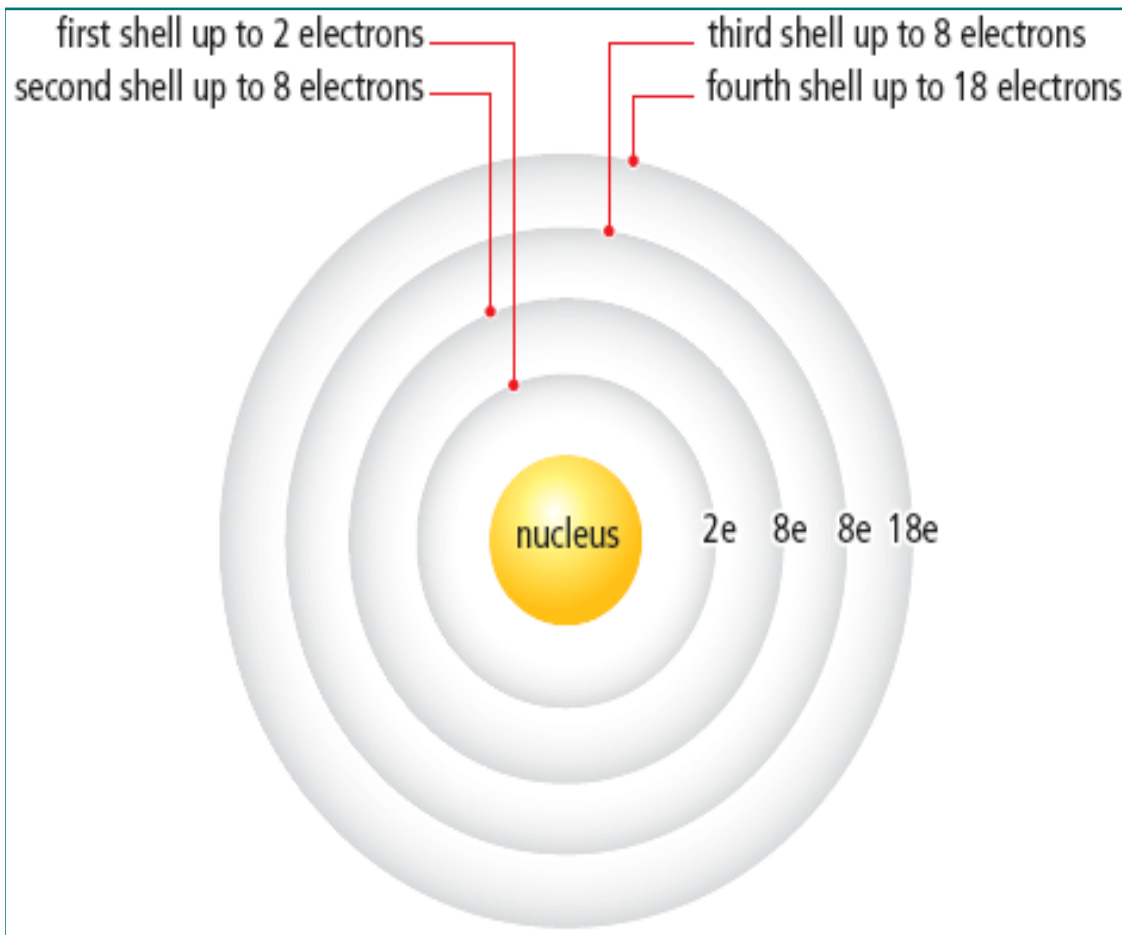
Photocopied/printed notes can not be used during the Unit Notebook Check in class.

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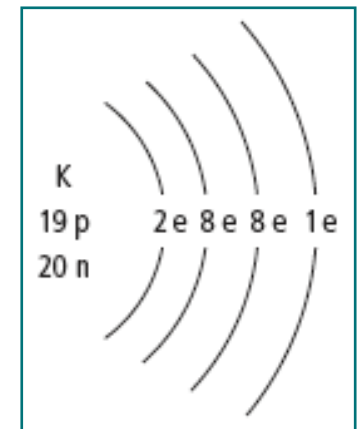
2.3 Periodic Table and Atomic Theory



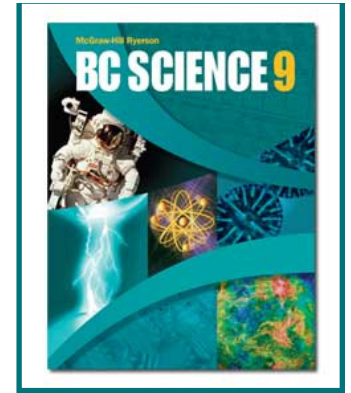
- Elements with similar properties have similar electron arrangements
- Bohr models show electron arrangement in shells



We will represent our atoms like this (without dots).



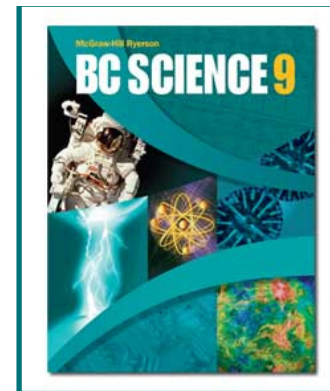
See page 64 - 65



Bohr model patterns

- Chemical families on the periodic table have the same number of valence electrons
- Elements in the same period have the same number of shells
- Period number indicates the number of electron shells
- Redraw the first 20 elements indicating #protons, electrons, neutrons, orbits and numbers instead of dots. (see K on previous slide)

	1								18
1	1 H								2 He
2	3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne	
3	11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	



Atom Stability

- Noble gases are very unreactive because their atoms have filled valence shells. Filled shells make atoms stable. Atoms with filled shells do not easily trade or share electrons.
- Other atoms gain or lose electrons in order to achieve the stability of noble gases. Gaining or losing electrons makes atoms into ions.
 - Metals lose electrons to form positive ions
 - Non-metals gain electrons to form negative ions
 - Ions have a similar electron arrangement to the nearest noble gas
 - Example: Sodium ion (**Na⁺**) has 11 protons (**11⁺**) and 10 electrons (**10⁻**) for a total charge of **1⁺**

	Lithium	Magnesium	Chlorine
Atom	Li 3 p 2, 1	Mg 12 p 2, 8, 2	Cl 17 p 2, 8, 7
Ion	Li ⁺ 3 p 2	Mg ²⁺ 12 p 2, 8	Cl ⁻ 17 p 2, 8, 8