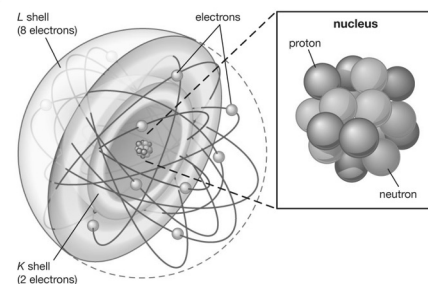


## The Atomic Structure Review

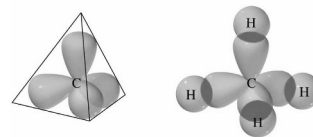


The *Modern Atom*, orbitals, nucleus and electrons shown

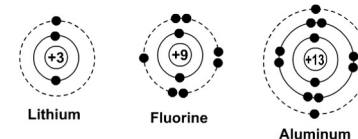
The *modern atom* contains a *nucleus* w/ *protons* ( $p^+$ ) and *neutrons* ( $n^0$ ). The outer atom contains *electrons* ( $e^-$ ) traveling in paths (*orbits*) around the nucleus in atomic shells (*orbitals*)

2

## Orbitals and Valence Electrons



Electrons ( $e^-$ ) fill into orbitals, 2 electrons into each *suborbital*. The standard 4 *lobes* shown above ( $2e^- + 4 \text{ lobes} = 8e^-$ )



Electrons ( $e^-$ ) fill into orbitals based on *Bohr's Model*. The outer most electrons are the *valence*  $e^-$ . The val.  $e^-$  are based on the group on P-Table

3

## Parts of the Periodic Table Review

### Periodic Table Groups and Periods

A group is a column on the periodic table. Elements have the same number of valence electrons.  
A period is a row on the periodic table. Elements have the same number of electron shells.  
There are 7 periods.

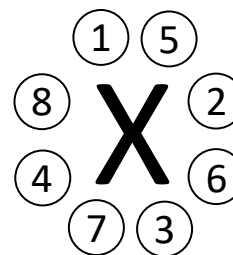
The diagram shows a standard periodic table with arrows indicating the 7 periods (rows) and 18 groups (columns).

The periodic table contains *groups* & *periods*. The val  $e^-$  are based on the *group* on the table

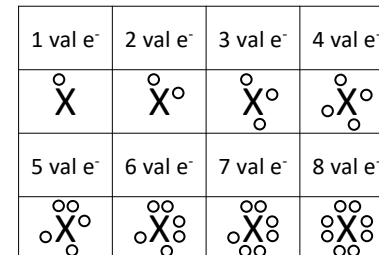
Group Number	Val $e^-$	Group Number	Val $e^-$
1A / 1	1	5A / 15	5
2A / 2	2	6A / 16	6
3A / 13	3	7A / 17	7
4A / 14	4	8A / 18	8

4

## Lewis Dot Structure Review



*Lewis Dot Structures* illustrate location of val.  $e^-$  in orbitals



*Lewis Dot Structures* for representative elements (1A – 8A) shown above

5

### **The Atomic Structure Key Terms**

#### *Nucleus*

Inner structure of atom containing the protons ( $p^+$ ) and neutrons ( $n^0$ )

#### *Atomic Orbit and Orbitals*

Path (*orbit*) and area (*orbital*) that electrons travel around the nucleus

#### *Groups and Periods*

Groups are up and down rows

Periods are left to right columns on the *Periodic Table*

#### *Periodic Table*

Table of elements based on the similar properties of elements.

#### *Bohr's Model*

Atomic Model where electrons travel around the nucleus in orbits within orbitals

#### *Lewis Dot Structure*

Visualization of valence electrons used to illustrate *atomic bonding*