

## Electron Configurations & The Periodic Table

Define:

Quantum numbers:

exclusion principle:

shielding:

effective nuclear charge:

electron penetration:

aufbau principle:

electron configuration:

orbital diagram:

Hund's rule:

Rank the orbital sublevels in order of lowest energy to highest energy.

What is the correlation between  $l$  value and sublevel energy?

Writing electron configurations - two common ways to designate the orbital and its electrons:

1.

2.

Relating quantum numbers and electron configurations.

For the first 10 elements of the periodic table, give  $Z$ , the values for all 4 quantum numbers of the \*last\* electron added to the element, and its orbital diagram.

H:

Li:

Be:

B:

C:

N:

O:

F:

Ne:

Looking back to fluorine, write the four quantum numbers associated with its 3<sup>rd</sup> electron and its 8<sup>th</sup> electron.

Period 3

Write the electron configurations and orbital diagrams for

Na:

Mg:

Al:

What do all three of these already have in common?

Is there another way you can write these configurations?

Period 4 and beyond  
Which fills first, 3d or 4s? Why?

Exceptions to the rule – Cr and Cu

Write the condensed electron configuration, orbital diagram, and quantum numbers  
(based on last electron added) for

K:

Ti:

Fe:

Ge:

V:

Se:

### **Periodic Trends**

Size trends:

Main group trends:

Transition element trends:

Ionization energy trends:

Electron affinity trends: