





CONCEPT: THE ELECTRON CONFIGURATION (SIMPLIFIED)

Electron Orbital Diagrams

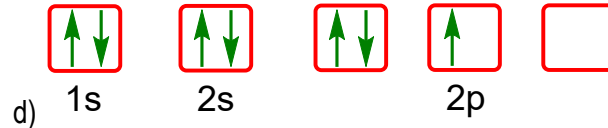
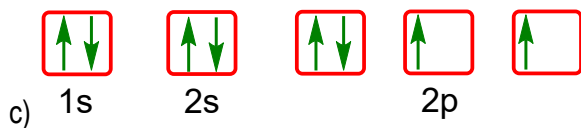
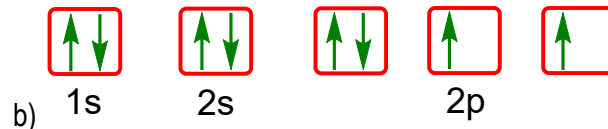
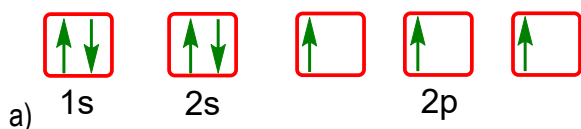
- The visual representation of electrons within **orbitals**.
 - **Degenerate orbitals:** **Electrons** in the same set of orbitals having _____ energy – filled using *Hund's Rule*.
 - **Hund's Rule:** Degenerate orbitals are first _____ -filled before they are totally filled.

Electron Orbital Diagrams		
Subshell	Sets of Orbitals	Max Electrons
s		_____
p		_____
d		_____
f		_____

EXAMPLE: Properly fill in the orbitals of an atom that possesses 8 electrons within its *d* set of orbitals.



PRACTICE: Which electron configuration represents a violation of Hund's Rule?

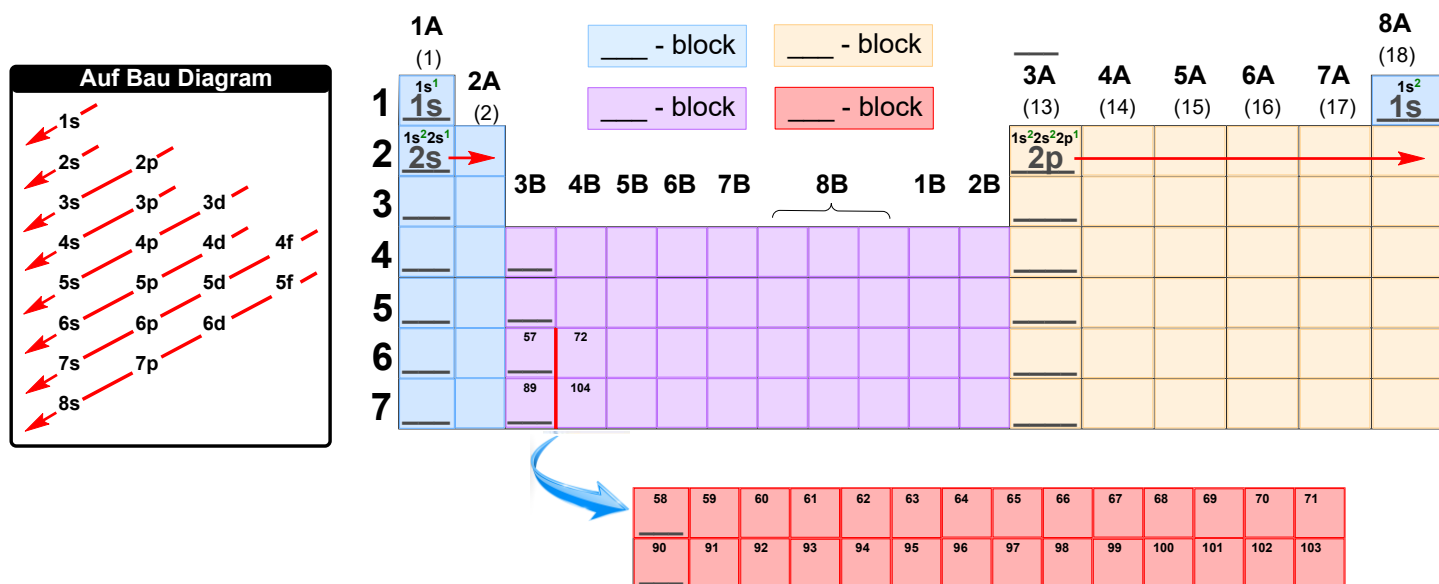


CONCEPT: THE ELECTRON CONFIGURATION (SIMPLIFIED)

Ground State Electron Configurations

- Distributions of electrons (1s, 2s, 2p ...) within orbitals using the *Auf Bau Principle*.

□ **Auf Bau Principle:** Starting from 1s, electrons fill _____ energy orbitals before moving to _____ energy orbitals.



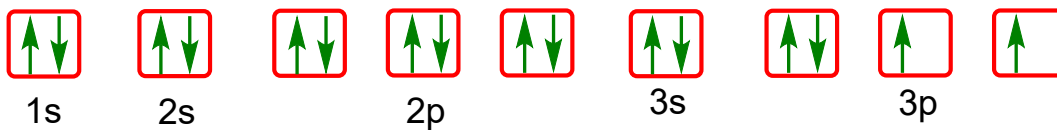
EXAMPLE: Write the ground state electron configuration for the following element: Fluorine ($Z = 9$)

PRACTICE: Which electron configuration represents a violation of the *Auf Bau Principle*?

- a) 1s 2s 2p
- b) 1s 2s 2p
- c) 1s 2s 2p
- d) 1s 2s 2p

CONCEPT: THE ELECTRON CONFIGURATION (SIMPLIFIED)

PRACTICE: Identify the element with the given electron orbital diagram.



a) Silicon

b) Fluorine

c) Sulfur

d) Chlorine

e) Phosphorus

PRACTICE: Write the electron configuration and electron orbital diagram for the following element:

Sulfur (Z = 16)

PRACTICE: Write the ground state electron configuration for the following element:

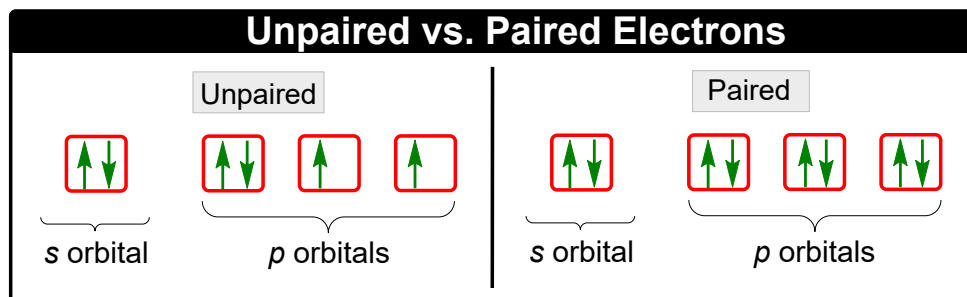
Magnesium (Z = 12)

CONCEPT: ELECTRON CONFIGURATION (SIMPLIFIED)

Unpaired vs Paired Electrons

- Recall, an orbital can hold a maximum of 2 electrons that pair up with opposite spins.

- **Unpaired Electron:** When an orbital contains ____ with its own spin.
- **Paired Electron:** When an orbital contains ____ each with its own spin.



EXAMPLE: Determine the number of unpaired electrons in vanadium.

- a) 1 b) 2 c) 5 d) 3

PRACTICE: Which of the following atoms has no unpaired electrons?

- a) Ca b) N c) C d) F

PRACTICE: Which of the following atoms has the most unpaired electrons?

- a) B b) Si c) P d) O e) Cl

