

## Chapter ~~6~~<sup>5</sup> Review

- Look at your review sheet.
- On your whiteboard, write the concept that you would like to see reviewed the most.

## Key Concepts

- Orbitals
- Energy Levels
- Electron Configurations
- Orbital Notations
- $c = \lambda \nu$  and  $E = h\nu$

## Key Concepts

- Pauli Exclusion Principle
- Hund's Rule
- Aufbau Principle
- Emission Spectra

## Orbitals

- There are 4 e- blocks: s, p, d, f
- How many orbitals are in each?
- What do they look like?

s: 1    p: 3    d: 5    f: 7

## Energy Levels

- Think rings of the Bohr Model.
- D block occupies 1 less row.
- F block occupies 2 less rows.
- Explain...

## Electron Configuration

- Aufbau Principle: *e<sup>-</sup> occupy the lowest energy level possible*
- Order of e- configuration.

42 Write the e- Configuration

• Pd.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$   
 $3d^{10} 4p^6 5s^2 4d^8$

• With Noble Gas Short Cut: Pd

$[Kr] 5s^2 4d^8$





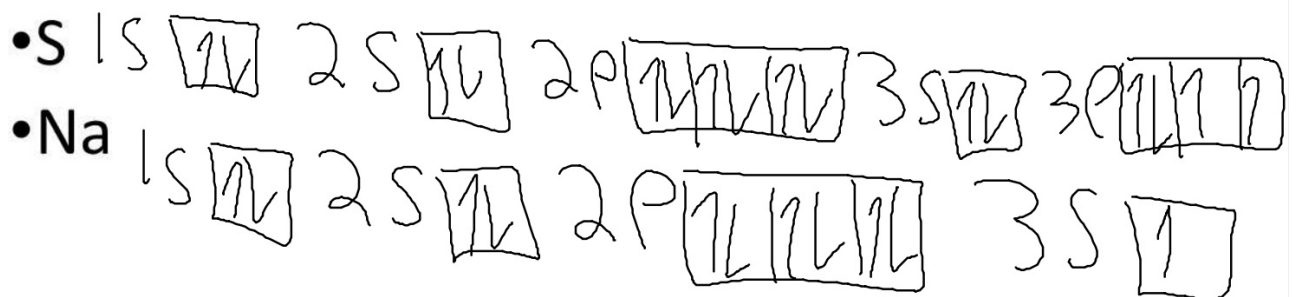
## Valance Electrons

- The electrons on the outer most energy level of an atom.
- Determine bonding behavior.
- **Only s and p** orbitals matter for this.
- How many in:  $\text{Pb}$  ,  $\text{Se}$  ,  $\text{Rn}$  ,  $\text{Md}$  .

## Orbital Notation

or in same orbital

- Pauli Exclusion: have opposite spins.
- Hun's Rule: Fill in 1 arrow per box, then go back & fill in other
- Write the Orbital Notation



What's Wrong? Pauli, Hund or Both?

H & P



(a)



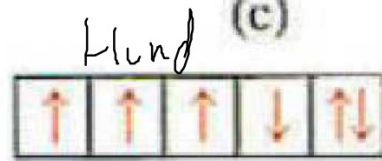
(b)



(c)



(d)



(e)



$$C=\lambda\nu \quad \text{and} \quad E=h\nu$$

- C-constant= $2.998 \times 10^8 \text{ m/s}$
- $\lambda$ -wavelength in meters
- $\nu$ -frequency in Hertz or  $1/\text{s}$
- E-energy in joules
- h-Plank constant= $6.626 \text{ js}$

## Tips

- Make sure that the wavelength is in meters before starting calculations.
- Write knowns, unknown, equations, algebra, plug in numbers.
- **LABLE ANSWER WITH UNITS.**

The energy of a wave is  $2 \times 10^{-22} \text{ J}$ . What is the frequency of the wave?

The wavelength of a wave is  $3 \times 10^{-6}$ . What is its frequency?

Ions: Atom w/ a charge

pos: Cation

neg: Anion

Cl atom  $P^+ : 17$   $e^- : 17$

Cl ion;  $P^+ : 17$   $e^- : 18$

$= Cl^-$



$\text{Cl}^{-}: 18e^{-}$

$1s^2 2s^2 2p^6 3s^2 3p^6$

$\text{Ca}^{2+}: 18e^{-}$

$1s^2 2s^2 2p^6 3s^2 3p^6$