

Warm up

How many protons, electrons, and neutrons do each of the following have?

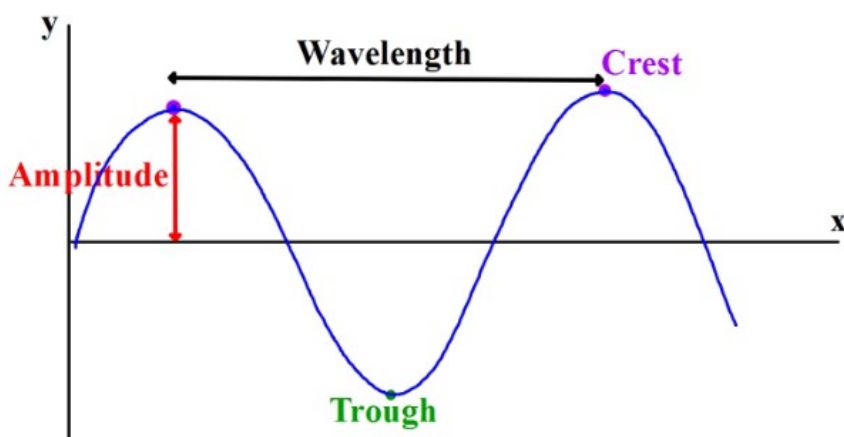
1) C

2) Cl

3) Na

4) K

Waves



frequency x wavelength = speed of light

$$c = \lambda \nu$$

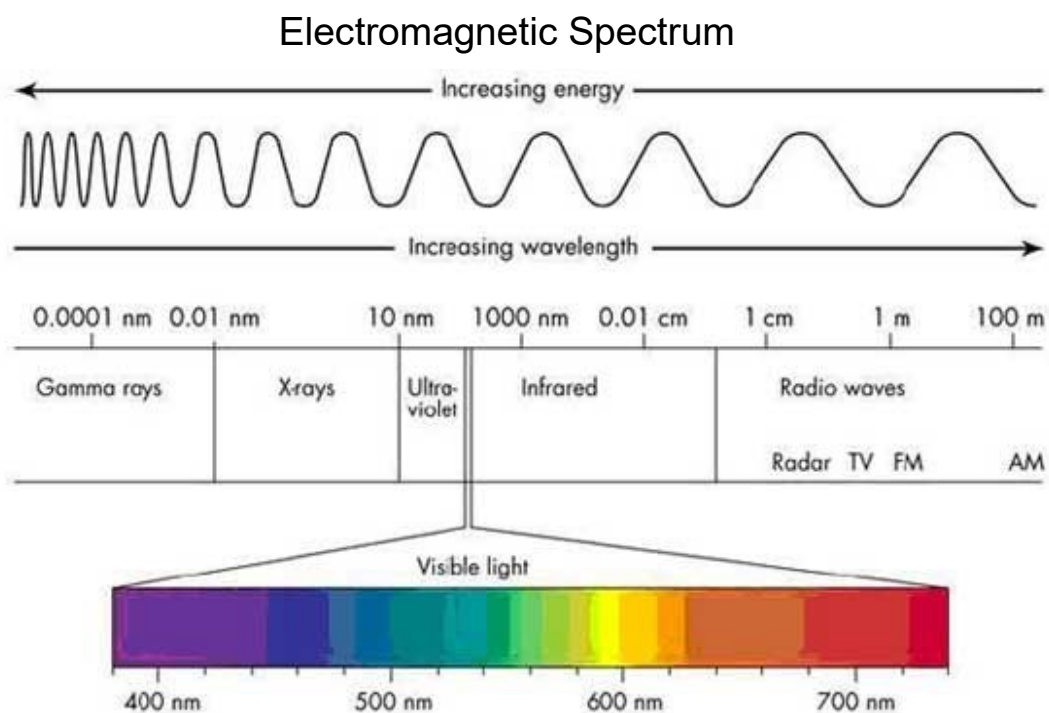
λ = Wavelength in meters
 ν = Frequency in Hz
 c = Speed of light m s^{-1}

$c = (\text{lambd})(\text{nu})$

metric unit of measurement for frequency is

hertz (per second) /s s^{-1}

How long is a radio wave?



Electrons and Quantized Absorption

ground state vs excited state

Electrons and their labeling system

principal energy level = n

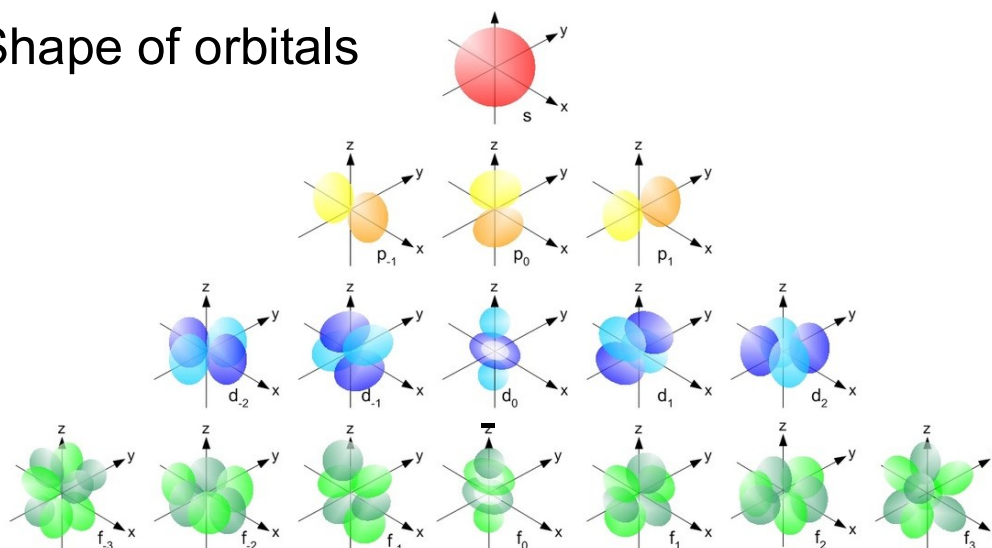
$$n = 1, 2, 3, 4, \dots$$

l = can be from 0 thru $n-1$

$$0 = s, 1 = p, 2 = d, 3 = f$$

m = from $-l$ thru positive l

Shape of orbitals



Pauli Exclusion Principle

at most 2 electrons per orbital

aufbau principle

lowest energy levels filled first

Hunds Rule

no doubling until all orbitals have one first

Rules for ground state electrons

- 1) first fill s
- 2) then fill p
- 3) don't fill d until next s is filled
- 4) don't fill f until next 2 s are filled

n	s	p	d	f
1				
2				
3				
4				
5				
6				

Warm up

Determine the electron configuration for calcium using the boxes with arrows (like we did last time)

The electron configuration of sulfur is

How to write it as the noble gas configuration:

- This part of the electron configuration represents Ne. (It is the first 10 electrons because that's how many neon has). It is also important to note that all noble gasses end in s^2p^6

-to write the electron configuration in the abbreviated simply replace the portion that is the noble gas with brackets

Complete the Electron Configuration WS

For the at least the first two questions, I want you to write the boxes. After that, if you can figure out the patterns, you can write them without drawing the boxes.

Patterns to look for..... the period the element is in will tell you the LARGEST principle energy level. The block on the periodic table (s, p, d, or f) will tell you where the last electrons go and how far into that block it is will tell you how many go into it.

Order in which electron orbitals are filled

n	s	p	d	f
1	1			
2	2	3		
3	4	5	7	
4	6	8	10	13
5	9	11	14	17
6	12	15	18	
7	16	19		