Here are three isotopes of an element: $^{12}_{6}C$ $^{13}_{6}C$ $^{14}_{6}C$

a. The element is: _____

b. The number 6 refers to the _____

c. The numbers 12, 13, and 14 refer to the _____

d. How many protons and neutrons are in the first isotope? _____

e. How many protons and neutrons are in the second isotope? _____

f. How many protons and neutrons are in the third isotope? _____

Here are three isotopes of an element: $^{12}_{6}C$ $^{13}_{6}C$ $^{14}_{6}C$

a. The element is: Carbon 6n° 7n° 8n°

b. The number 6 refers to the Atomic # = # p^+

c. The numbers 12, 13, and 14 refer to the MASS # (Sum of $p^+ + n^\circ$)

d. How many protons and neutrons are in the first isotope? 6 p^+ 6 n°

e. How many protons and neutrons are in the second isotope? 6 p^+ 7 n°

f. How many protons and neutrons are in the third isotope? 6 p^+ 8 n°

Complete the following chart:

Isotope name	Isotope Symbol	atomic #	mass #	# of protons	# of neutrons	# of electrons
uranium-235						
uranium-238						
	$^{10}B^{3+}$					
boron-11						

Complete the following chart:

Isotope name	Isotope Symbol	atomic #	mass #	# of protons	# of neutrons	# of electrons
uranium-235	$^{235}_{92}U$	92	235	92	235 − 92 = 143	92
uranium-238	$^{238}_{92}U$	92	238	92	238 − 92 = 146	92
Boron-10	$^{10}_{5}B^{3+}$	5	10	5	5	2
boron-11	$^{11}_{5}B$	5	11	5	6	5

Naturally occurring europium (Eu) consists of two isotopes was a mass of 151 and 153. Europium-151 has an abundance of 48.03% and Europium-153 has an abundance of 51.97%. What is the atomic mass of europium?

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$$\left(151 \times \frac{48.03}{100}\right) + \left(153 \times \frac{51.97}{100}\right) =$$

$$72.53 + 79.51 =$$

$$152.04\ u$$

Calculate the energy associated with a photon of light that has a wavelength of 325 nm. What portion of the electromagnetic spectrum would this light belong to?

Calculate the energy associated with a photon of light that has a wavelength of 325 nm. What portion of the electromagnetic spectrum would this light belong to? U.V. Light

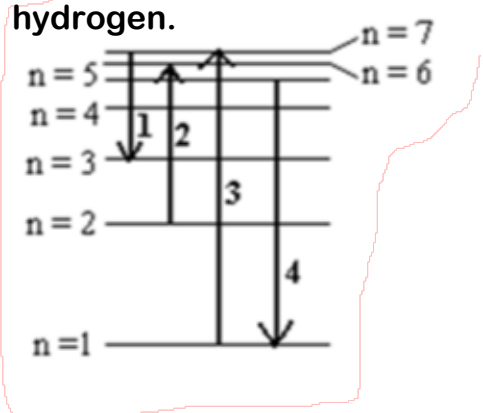
$$325\,nm \times \frac{0.000\,000\,001\,m}{1\,nm} = 3.25 \times 10^{-7}\,m = \lambda$$

$c = \lambda f$ $\quad \frac{c}{\lambda} = f \quad \frac{3.00 \times 10^{8}\,m/s}{3.25 \times 10^{-7}\,m} = 9.23 \times 10^{14}\,s^{-1} = f$

$E = hf$ $\quad E = 6.626 \times 10^{-34}\,J \cdot s \times 9.23 \times 10^{14}\,s^{-1}$

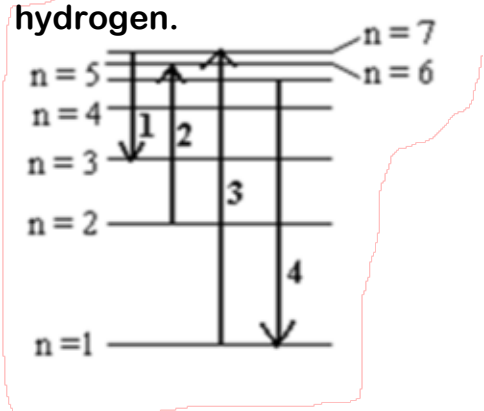
$= 6.12 \times 10^{-19}\,J$

Possible spectral lines for hydrogen.



1. What does an arrow up in the diagram indicate? arrow down?
2. Why are the lines for energy levels 5 through 7 converging together and levels 1 & 2 so far apart?
3. Which transition represents the largest emission of energy?
4. Which transition represents the light emitted with the shortest wavelength?
5. Which transition represents the light emitted with the lowest frequency?

Possible spectral lines for hydrogen.



1. What does an arrow up in the diagram indicate? arrow down? ↑ Absorption ↓ Emission
2. Why are the lines for energy levels 5 through 7 converging together and levels 1 & 2 so far apart?
   Differences in energy large between 1 & 2. Small between 5, 6, 7
3. Which transition represents the largest emission of energy?
   Arrow # 4 (5 to 1)
4. Which transition represents the light emitted with the shortest wavelength?
   Arrow #4 Most energy = highest frequency = shortest λ
5. Which transition represents the light emitted with the lowest frequency?
   Arrow # 1 (7 to 3) Shortest arrow, least Energy, lowest frequency

Write the orbital diagram for fluorine.

Write the electron configuration for selenium writing the entire configuration starting at 1s.

Write the electron configuration for polonium using a noble gas to represent the core electrons.

Write the electron configuration for gadolinium using a noble gas to indicate the core electrons.

Write the electron configuration for yet to be discovered element 149 assuming Uuo is a nobel gas. Follow the pattern you have learned adding row 8 to the periodic table.