Atomic Structure and Electrons in Atoms Review

Who was the first person to talk about "atoms" in the fourth century B.C.?
_____

How did J.J. Thompson discover the electron?

_____

_____

Define the word atom in your own words.

Fill in the following table concerning subatomic particles.

Particle	Where is it found in the atom?	What is its charge?	Check the particles that have equal masses.
Proton			
Neutron			
Electron			

What part(s) of Dalton's atomic theory is/are incorrect? _____

_____

Describe Rutherford experiment and how he discovered the nucleus. _____

_____

_____

How many protons and electrons are in an atom of the element sulfur? p^+ _____ e^- _____

What does the atomic number of an element represent?
_____

How do we find the mass number of an atom?
_____

How do sulfur-32 and sulfur-34 differ, and why?
_____

Fill in the missing information for the following elements.

Element	Atomic Number	Mass Number	Number of protons	Number of neutrons	Number of electrons
	23	51			
			14	14	
Ca		40			
				13	12

A sample of silicon has three isotopes with the following abundances. Find the average atomic mass of silicon.

silicon-27   30.26%
silicon-28   66.22%
silicon-29   3.52%

Each model of the atom listed below should match up with one phrase (A-E).

_____ Dalton   A. gold foil experiment

_____ Rutherford   B. planetary model

_____ Thomson   C. atoms are solid spheres

_____ Bohr   D. cathode ray tubes

_____ Quantum Mechanical   E. n and l values

The Pauli Exclusion principle states that an orbital may contain _____(#) electrons with _____ spins.

Write the complete electron configurations for the following:

C   _____

Cr   _____

Cl   _____

How many electrons are in the highest occupied energy level for nitrogen? _____

How many unpaired electrons are there? _____
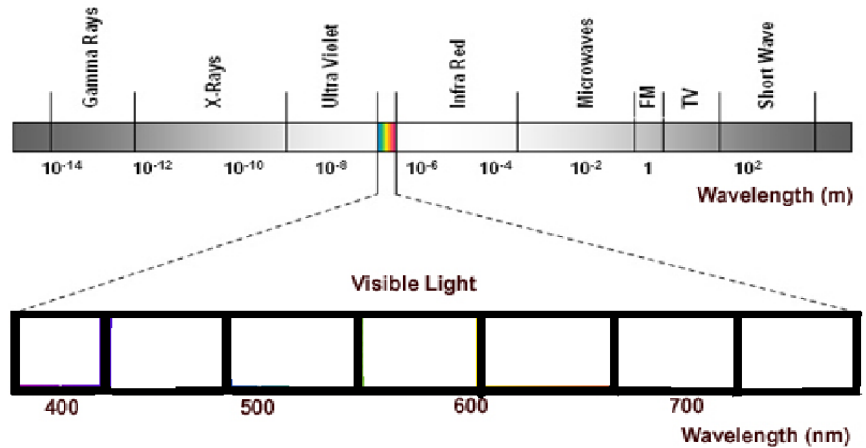
How many total electrons can the 1st energy level hold? _____

How many total electrons can the 2nd energy level hold? _____

How many total electrons can the 3rd energy level hold? _____

Which of the following is an incorrect sublevel designation?   5s   4p   3d   2f

Using the diagram, write the colors of the rainbow into the boxes according to increasing wavelength. Also, label the side of the diagram where you would find the highest frequency energy and where you would find the lowest frequency energy.

Calculate the frequency of light that has a wavelength of 4.1 x 10^{-2} cm. (c=3.0 x 10^8 m/s)

Calculate the energy of a photon of light that has a frequency of 1.55 x 10^{18} s^{-1} . (h= 6.626 x 10^{-34} J·s)