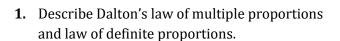
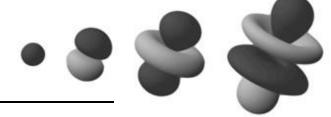
ATOMIC STRUCTURE

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- **2.** What did JJ Thompson discover? Draw Thompson's atomic model. What is it called?
- **3.** What are Rutherford's three conclusions about atoms? Draw a picture of the Rutherford model of the atom.
- **4.** Describe in terms of electron transitions and energy levels, how atoms give off photons of light. Draw a picture of the Bohr model.
- **5.** Draw a picture of the Shcrodinger's orbital model of the atom.
- **6.** Determine the number of valence electrons in each element: Hydrogen, Calcium, Chlorine, Nitrogen, Rubidium, Lithium, Argon, Yttrium, Zirconium, Cesium.
- **7.** Write the Bohr notation of each element listed in the previous question.
- **8.** Write the Bohr notation of each element with its last valence electron in the excited state for each element listed in the previous quesiton.
- **9.** What are AMU's? How is one AMU defined?
- **10.** Describe the location, charge and mass of the three primary components of atoms.
- 11. Determine the number of protons and neutrons in the following isotopes (show your work):
 Polonium-210, C-14, Uranium-235, Uranium-238, Na-22, Sr-90, Th-232, Pb-206
- **12.** Complete the table shown at the end of the problem set.
- **13.** Find the atomic mass for each:
 (a) An element discovered in Spring Valley called "valleyum" occurs in the following proportions: 81.75% Vm–500 and 18.25% Vm–502



- (b) A new element, "schoolium," found in schools occurs in the following proportions: 9.750% Sl-750 and 90.25% Sl-752 (c) A new element "newium" has been discovered and occurs in the following proportions: 25.25% Nw-300; 15.25%; Nw-301; and 59.50% Nw-302
- **14.** The electromagnetic spectrum. What is it? List any three of it's components.
- **15.** Astronomers are able to determine what elements exist on other planets without ever going there. How is this done? What is this technique called?
- **16.** Base your answers to the following questions on the diagram at the end of the problem set, which shows bright-line spectra of selected elements.
 - (a) Explain how a bright-line spectrum is produced, in terms of excited state, energy transitions, and ground state.
 - (b) Identify the two elements in the unknown spectrum.

Mass Number	Atomic Number	Isotope Notation	Number of Neutrons	Bohr Notation	Electron Dot
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			2		
20					
		²⁷ ₁₃ AI			
				2-8-18-5	
	20				
					: Ar:

Bright-Line Spectra													
Li										_			
н										\square			
He													
Na													
Unknown										L			