

2. Complete the following table on the subatomic particles.

Subatomic particle	Location in the atom	Electrical charge	Mass in amu

3. Sketch a picture model of a boron atom, showing the relative locations of the subatomic particles.

4. Complete the following table on atomic structure.

Atom or ion	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons
^{193}Ir					
$^{122}_{51}\text{Sb}^{5+}$					
$^{78}\text{Se}^{2-}$					

5. How does a cation form from a neutral atom? How does an anion form from a neutral atom?
6. There are three stable isotopes of argon: argon-36, argon-38, and argon-40. What do the atoms of these isotopes have in common? What would be different about their atoms?
7. Why are the atomic masses listed in the periodic table not reported as integers?
8. Calculate the average atomic mass of lithium which occurs as two isotopes that have the following atomic masses and abundance in nature: 6.017 amu, 7.30%; and 7.018 amu, 92.70%.

9. Explain each of the major statements of Dalton's atomic theory.

10. Complete the following table

Group number	Group Name	Typical ion charge
1		
	Alkaline earth metals	
		Varies
16		
		-1
		Doesn't form ions

11. List typical properties of metals.

12. List typical properties of nonmetals.

13. Where are metals, nonmetals and metalloids found in the periodic table?

14. Are the following elements metals, nonmetals, or metalloids?

- | | |
|--------------|------------|
| a. iodine | e. uranium |
| b. manganese | f. radon |
| c. osmium | g. barium |
| d. sulfur | h. silicon |

15. Describe the experiments done by the following scientists and explain their significance. Include sketches!

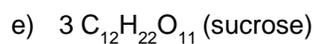
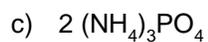
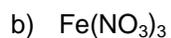
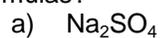
a) Thomson

b) Rutherford

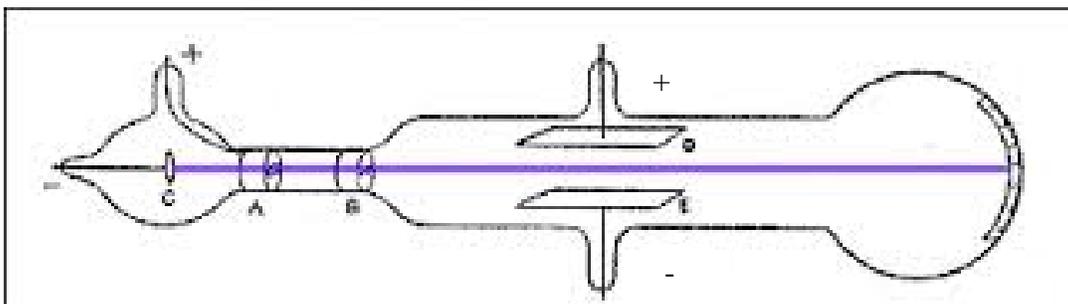
c) Millikan

16. Compare and contrast Mendeleev's and Moseley's contributions to the development of the periodic table.

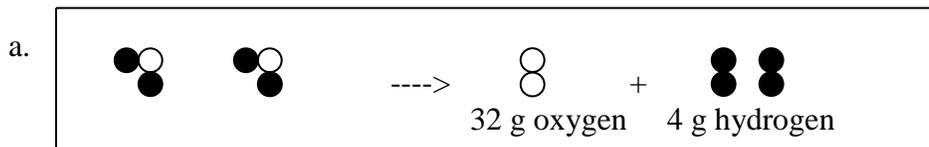
17. How many atoms of each element are present in each of the following chemical formulas?



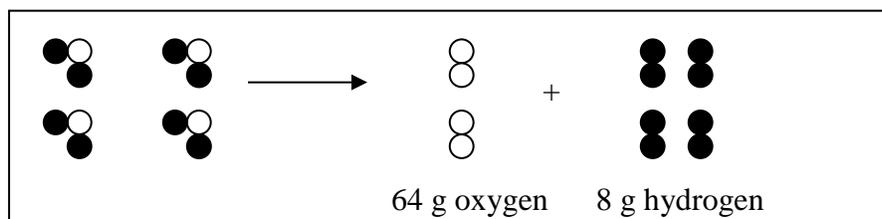
18. What is wrong with this diagram of a cathode ray tube? How should it look? Explain your answer.



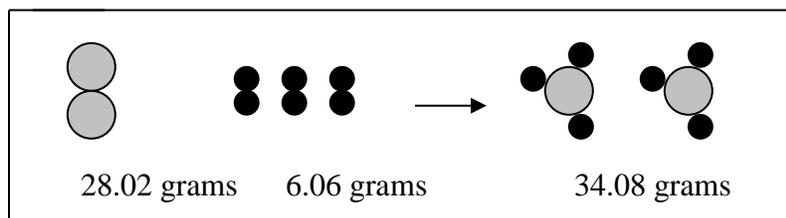
19. Identify the law that is depicted by the following picture models. Give reasons to justify your choice. Then, identify the scientist who discovered this law.



vs.



b.



c.

