

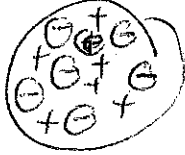
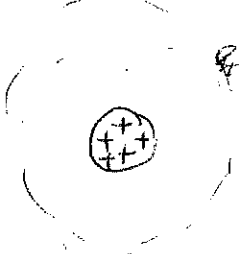
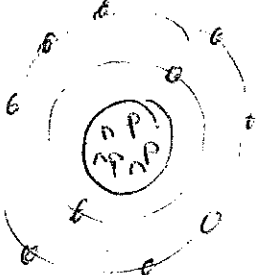


Science 9 – Atomic Model Worksheet

Name: \_\_\_\_\_

1. Complete the chart below summarizing the main points of each of the atomic models, and draw a sketch of the atom that corresponds to each model.

The main ideas in the model	The aspects of the model that scientists no longer agree with	Diagram of the atom according to this model
Greek Model		
Dalton Model		
Thomson Model		
Rutherford Model		
Bohr Model		

*Refer to Atomic history of theory handout*

2. Complete the chart below describing the 3 main subatomic particles.

Particle	Location in the atom	charge	Mass in "atomic mass units"
proton	nucleus	+1	1
Neutron	nucleus	0	1
electron	electron cloud @ outside nucleus	-1	1/1820

3. Define each of the following terms:

Electron cloud	Region outside the nucleus where the electrons are located
Isotope	atom with <del>an</del> a different # of neutrons than usual
Mass number	# of protons + # neutrons
Atomic mass	average mass of 1 atom of an element.
Atomic number	# of protons

4. Use the following information to answer this question:

Element	Atomic number	Mass number
Hydrogen	1	1
Helium	2	4
Carbon	6	12
Nitrogen	7	14
Oxygen	8	16
Fluorine	9	19
sodium	11	23
aluminum	13	27
sulfur	16	32

- How many neutrons are found in an atom of aluminum?  $27 - 13 = 14$
- How many protons are found in an atom of fluorine?  $9$
- How many energy levels are occupied in an atom of oxygen?  $2$
- Carbon has a mass number of 12 and an atomic mass of 12.011. Why are these numbers different? (explain)

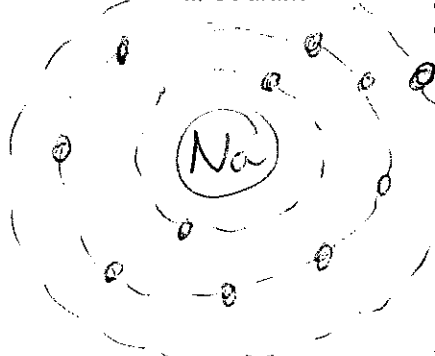
Most carbon atoms have  $6p + 6n = \text{mass of } 12$  but some have more neutrons, so have a larger mass. Average mass of all carbon atoms is greater than 12.

e. Draw the electron configuration of the following atoms:

i. hydrogen

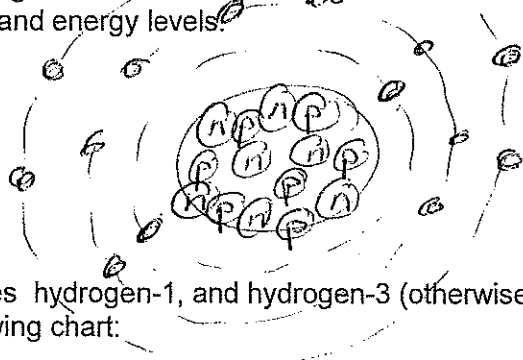


ii. sodium



14 N 7p  
7n

5. Draw an atom of nitrogen-14. Include in the diagram the correct number of protons, neutrons, electrons, and energy levels.



6. Compare the isotopes hydrogen-1, and hydrogen-3 (otherwise known as tritium) by completing the following chart:

	Hydrogen-1	Hydrogen-3 (tritium)
Atomic mass	1	3
Atomic number	1	1
Number of neutrons	0	2
Number of electrons	1	1

7. Complete the following chart:

element	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons in the atom	Number of electrons in the most common ion
sodium	11	23	11	12	11	10
magnesium	12	24	12	12	12	10
aluminum	13	27	13	14	13	10
phosphorous	15	31	15	16	15	18
sulfur	16	32	16	16	16	18
chlorine	17	<del>25</del> 35	17	18	17	18

copy 7/25