Review Sheet*Type equation here.*
Chapter 4 – Atomic Structure

1. Define the following vocabulary words
   - atom
   - group
   - isotope
   - mass number
   - nucleus
2. What were the contributions to the study of atomic structure of each of the following scientist
   - Democritus – the first scientist to suggest that matter is made of smaller particles
   - JJ Thompson – discovered the electron using the Cathode Ray Tube Experiment. He developed the "Plum Pudding Model."
   - Dalton – Discovered the nucleus using the Gold Foil Experiment. The nucleus is a dense positively charged center of the atom.
   - Chadwick – Discovered the proton.
   - Rutherford – Theorized that electrons have fixed or quantized amounts of energy and are located within energy levels. He developed the Planetary Model for the atom.
3. List the four ideas of Dalton's Atomic Theory
   Matter is made of tiny indivisible particles called atoms. *disproved: atoms are divided into smaller particles
   All atoms of the same element are identical. * disproved: atoms have isotopes with different masses and neutrons
   Atoms combine in fixed, whole number ratios to for compounds
   Atoms cannot be created nor destroyed, but can rearrange in chemical reactions.
4. List the three subatomic particles, giving their name, charge, relative atomic mass, and symbol.

Proton	+1	1.00 amu	nucleus	p^+
Neutron	0	1.00 amu	nucleus	n^0
Electon	-1	1/1840 amu	electron cloud	e^-

5. List the number of protons, neutrons and electrons in each of the following

$^{33}_{16}S^{-2}$	$^{56}_{27}Co^{+3}$	$^{208}_{82}Pb^{+4}$
p^+ 16	p^+ 27	p^+ 82
n^o 17	n^o 29	n^o 126
e^- 18	e^- 24	e^- 78

6. Write the symbol is $^{A}_{Z}X$ format for each of the following
   a. protons = 33 neutrons = 42 electrons = 36 $^{75}_{33}As^{3-}$
   b. protons = 76 neutrons = 115 electrons = 72 $^{191}_{76}Os^{4+}$
   c. protons = 10 neutrons = 11 electrons = 10 $^{21}_{10}Ne$
7. Calculate the average atomic mass of sulfur where

Sulfur 32	mass = 31.972u	abundance = 95.002%
Sulfur 33	mass = 32.971u	abundance = 0.76%
Sulfur 34	mass = 33.967u	abundance = 4.22%
Sulfur 36	mass = 35.967u	abundance = 0.014%

.95002 x 31.972 = 30.3740
.0076 x 32.971 = .2506
.0422 x 33.967 = 1.434
.00014 x 35.967 = .00504
32.0636

8. Fill in the missing parts of the following table:

Element	Symbol	At. #	Mass #	p^+	n^o	e^-
Gallium	Ga	31	70	31	39	31
Aluminum	Al	13	27	13	14	13
Europium	Eu	63	152	63	89	63
Bismuth	Bi	83	209	83	126	83
Silver	Ag	47	108	47	61	47
Sulfur	S	16	32	16	16	16
Bromine	Br	35	80	35	45	35