Chapter 4

Introduction to Atoms

Name _____***Answer Key***_____
Class Hour: _____

****Test Date: Friday, November 21, 2014**

Chapter 4 –Introduction to Atoms Outline
Section 1-Development of the Atomic Theory

I. The Beginning of the Atomic Theory

*Notes: The word atom is from the Greek word atomos, meaning "not able to be divided".

_____ said that all atoms are small, hard particles.

A. From Aristotle to Modern Science

*Notes-An _____ is the smallest particle into which an element can be divided or cut.

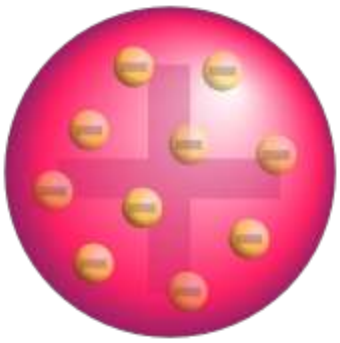
II. Dalton's Atomic Theory Based on Experiments

A. Not Quite Correct

III. Thomson's Discovery of Electrons

*Notes-The negatively charged particles of atoms discovered by Thomson are called _____.

A. Like Plums in a Pudding



* What is a plum pudding? Think of a chocolate chip cookie, with the plums = chocolate chips!

* In Thomson's "Plum Pudding" model of the atom, the Plums represent _____.

IV. Rutherford's Atomic "Shooting Gallery"

A. Surprising Results

V. Where are the Electrons?

A. Far from the Nucleus

*Notes-The central region of the atom is called the _____.

B. Bohr's Electron Levels

C. The Modern Atomic Theory

*Note- The region of the atom where the electrons are most likely to be found is the _____.

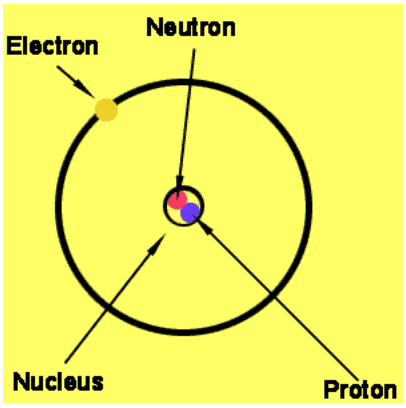
*Note-Democritus, Dalton, Thomson, Rutherford, and Bohr **all** have contributed to the development of the _____.

Chapter 4 –Introduction to Atoms Outline
Section 2-The Atom

I. How Small is an Atom?

II. What is an Atom Made of?

*Notes:



*The _____ are negatively charged particles.
*The _____ are positively charged particles.
*The _____ are particles that have no charge.
*The _____ is the dense center of the atom.

.

A. The Nucleus
*Notes-_____ are subatomic particles that have a positive charge.
*Notes-The unit of mass that describes the mass of an atom or molecules is called _____.
*Notes-The particles in the center of an atom that have no charge are called the _____.

B. Outside the Nucleus
*Compared to the protons and the neutrons, the electrons have the _____ mass.

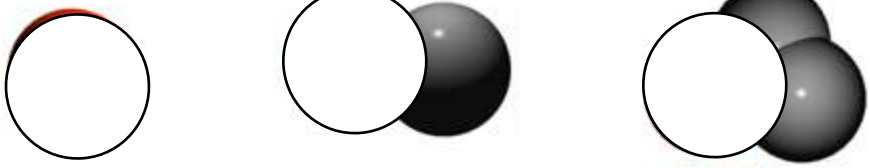
II. How do Atoms of Different Elements Differ?
A. Starting Simply
B. Now for Some Neutrons
C. Building Bigger Atoms
D. Protons and Atomic Number
*Notes-The number of protons in the nucleus of an atom give the element its _____. (also the number of electrons)

III. Isotopes

*Notes-Atoms that have the same number of protons but different numbers of neutrons are called _____.

Isotopes

Atoms of the same element can have different numbers of neutrons; the different possible versions of each element are called **isotopes**. For example, the most common isotope of hydrogen has no neutrons at all; there's also a hydrogen isotope called **deuterium**, with one neutron, and another, **tritium**, with two neutrons.



No neutrons — **Hydrogen**

One neutron — **Deuterium**

Two neutrons — **Tritium**

A. Properties of Isotopes

B. Telling Isotopes Apart

*Notes- The _____ of an atom is the sum of the protons and the neutrons.

*Notes-An atom of boron has 5 protons, 6 neutrons, and 5 electrons. It mass number will be _____

C. Naming Isotopes

*Notes-The element copper has two isotopes, copper-63 and copper 65. Both isotopes have an ***atomic number of 29*** because there are ***29 protons in the nucleus***.