

Unit F – The Atom

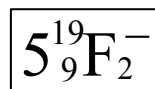
Name _____ Per _____

Papers worth reviewing

- LAD F1 – Pennies as a Model of Isotopes
- NoteSheet F1 – Atoms and Ions
- NoteSheet F2 – Periodic Table and Isotopes
- NoteSheet F3 – Light
- NoteSheet F4 – Electron Configuration not on midyear
- NoteSheet F5 – Atomic Size
- NoteSheet F6 – Ionization Energy
- Practice F1 – Atoms and Ions
- Practice F2 – Isotopes
- Practice F3 – Light and Electrons
- Practice F4 – Electron Configuration
- Practice F5 – Periodic Trends not on midyear
- Consider using the class presentation and clicker questions for review as well (available on the unit E document page at the top)
- Consider reviewing your openers.
(You can find a pdf with all the openers...and more, with answers on the documents page)
- Consider using the vocabulary list on the back of this sheet

Objectives

1. Understand that the atom is the fundamental particle of an element, made of three subatomic particles
 - proton, electron, neutron
 - know the charge, location within the atom, relative mass
2. Understand that protons and neutrons do not change, but electrons can come and go to convert into ions
 - electrons gained produces negative ions called anions
 - electrons lost produces positive ions called cations
3. Understand that atoms of some elements have isotopes
 - same number of protons (electrons may vary as isotopes can be atoms or ions)
 - different number of neutrons, thus different atomic mass
4. Understand that molar masses are weighted average masses dependent on percent abundance in nature. Perform calculations.
5. Know the numbers associated with chemical symbols
 - coefficient (5 atoms not bonded)
 - mass number (19), atomic number (9)
 - subscript (2), superscript (–, the 1 is understood, could be some other #)
6. Be able to navigate the periodic table
 - metals vs nonmetals, transition metals
 - alkali metals, alkaline earth metals, halogens, noble (inert) gases
7. Have an appreciation and understanding of electromagnetic radiation aka Light
 - microwaves, infrared, visible (ROYGBIV), ultraviolet, x-rays
 - speed of EMR, wavelength, frequency, energy (relationships between these properties of light)
 - using radiation, light, and electricity to probe atoms to learn about electrons in particular emission spectra
8. Understand the electron arrangement inside atoms
 - electron configuration
 - orbital notation
 - Bohr diagrams
9. Know the periodic trends and be able to describe them in terms of Coulombs Law
 - atomic and ionic radius
 - isoelectronic particle comparisons
 - first ionization energy
 - successive ionization energy not on midyear



Unit F – The Atom

Vocabulary List

This vocabulary list is meant to complement your study. Knowing this list alone, without the concepts on the front would not prepare you for the test.

- atom
- atomic number
- average atomic mass (molar mass)
- weighted average
- percent abundance
- mass number
- protons
- neutrons
- electrons
- nucleus
- electron cloud
- ions
- anions
- cations
- isotopes
- periodic
- periodic table
- column, family, group
- row, period
- metals vs nonmetals
- transition metals
- alkali metals
- alkaline earth metals
- halogens
- noble (or inert) gases
- EMR
- microwaves, infrared, visible light (ROYGBIV), ultraviolet, x-rays
- wavelength, frequency
- excited state **excited state**
- ground state **ground state**
- electron configuration
- orbital notation
- orbitals (s, f, d, p)
- energy levels
- valence electrons
- inner core of electrons
- effective nuclear charge (ENC) **not on midyear**
- Coulombs Law
- isoelectronic
- ionization energy
- successive ionization energies
- periodic trend (for atomic and ionic radius, for ionization energy, for successive ionization energies)