

Study List

- Know how to determine the number of significant figures in a measurement
- Know that when adding or subtracting measurements, the answer should have the *least number of decimal places* whereas if you multiply or divide measurements, the answer should have the *least number of significant figures*.
- Know how to use the density equation
- Know that gamma decay is the most penetrating (most dangerous), beta decay is very penetrating (dangerous), and alpha decay is the least penetrating (least dangerous)
- Know how to write nuclear equations for alpha decay and beta decay
- Know what the nuclear symbols are for a beta particle and alpha particle
- Know the names and formulas of the acids from Elementary Knowledge
- Know the 7 diatomic gases from Elementary Knowledge (Hint: HOFBrINCl)
- Know your polyatomic ions (names, formulas, and charges) from Elementary Knowledge
- Know how to figure out the charge on an ion based on what group it is in on the periodic table
- Know how to figure out the name of a compound when given the name
 1. Ionic compounds don't have prefixes
 2. Covalent compounds have prefixes
- Know how to get a chemical formula from the name
 1. Covalent compounds have prefixes
 2. Ionic compounds have charges to criss-cross
- Know how to predict smell based on names of molecules and also based on functional group structures
- Know the names of functional groups and what their structures look like
- Know the law of conservation of matter
- Know that elements in the same group have similar properties
- Know the trend for reactivity
- Know the trend for atomic size (i.e. across a period and down a group)
- Know the names and locations of these groups: alkali metals, alkaline earth metals, halogens, noble gases
- Know what determines the identity of an element
- Know what an isotope is
- Know how to predict the most abundant isotope of an element
- Know how to write nuclear symbols and hyphen-notation for isotopes
- Know what the relative sizes and charges of the 3 subatomic particles: proton, electron, neutron
- Know how to use a periodic table to determine the # of protons an atom contains
- Know how to use a periodic table to determine the atomic mass of an atom
- Know the difference between these types of bonds: metallic, ionic, molecular covalent, & covalent network
- Know the difference between covalent bonding and ionic bonding (for example: nonmetals only versus metals bonded to nonmetals)
- Know that electrons are shared in covalent bonds but transferred in ionic bonds
- Know which type of compound dissolves, conducts, and conducts when dissolved
- Know how to write electron configurations
- Know how to determine the # of valence electrons an atom has by looking at its electron configuration (hint: valence electrons are the **s** electrons and the **p** electrons only.)
- Know how to determine the # of valence electrons an atom based on its group # in the periodic table
- Know how to determine how many valence electrons an atom will lose or gain to become a noble gas (ex: since calcium is in group 2, it has 2 valence electrons. It's easier to lose 2 than gain 6. Therefore, *it will lose 2 electrons*.)
- Know how to draw dot structures for single elements and for compounds
- Know the octet rule and HONC 1234 rule
- Know how to predict how many bonds an atom will form based on the HONC 1234 rule
- Know how to obtain isomers for a particular formula
- Know the trend for electronegativity (i.e. across a period and down a group)
- Know how to use electronegativities to determine if a bond will be polar (hint: the difference tells you if it will be nonpolar, polar, or ionic)

- Know how to determine shape based on dot structures (VSEPR)
- Know how to determine polarity based on shape
- Know how to predict if a molecule will dissolve in water (and therefore have a smell)
- If a molecule is polar, know how to determine which end is partially positive and which end is partially negative
- Know that nonpolar molecules have London Dispersion IMF's, polar molecules have dipole-dipole IMFs, and polar molecules containing H bonded to N, O, or F have hydrogen-bonding IMFs.
- Know that intermolecular forces are just attractions to neighboring molecules and are much weaker than bonds.
- Know how to predict if a molecule will "bead up" on wax paper or bend toward a charged wand
- Know that catalysts speed up reactions but are not consumed in the reaction.