

You should be successful on exam 2, if you can do the following (in addition to the objectives for exam 1).

MOLECULES**CHAPTER.SECTION**

1. Identify the kinds & numbers of atoms in a formula (v.v.) **Unit 5, Sections 1-3,**
2. Write formulas from ions given names (v.v.)
3. Predict what ions are formed from given elements, using their place in the chart.
4. Write formulas for compounds, given their name (vv)
 - metal-nonmetal
 - variable valence metal-nonmetal
 - polyatomic compounds
 - Write the symbols and charge for polyatomic ions given their name (vv)
 - nonmetal-nonmetal
 - oxyanion compounds
 - acids
5. Define and use average atomic mass & amu
6. Define and use molecular mass & formula mass (weight)
7. Define and use the mole, Avogadro's number, & Molar Mass **Unit 2, section 5**
8. Convert between moles, grams, & # of particles for elements or compounds
9. Calculate the mass or mass percent of an element or ion in a compound **Unit 8, Section 1**
10. Calculate empirical formulas given mass or % of elements **Unit 5.3b & Unit 8.1**
11. Calculate molecular formulas from the empirical given molar mass
12. Convert between moles, grams, & # of particles for hydrates

BONDING AND GEOMETRY-**CHAPTER.SECTION**

1. Predict what ions are formed from given elements, using electron structure.
2. Determine bond type: ionic, covalent, polar covalent. **Unit 6, Sections 1-3**
3. Determine bond polarity
4. Write electron dot symbols for atoms, ions, and compounds **Unit 5, Section 1d**
5. Write resonance structures for molecules **Unit 6, Sections 1-3**
6. Describe the octet rule and its limitations
7. Assign formal charges
8. Summarize VSEPR theory **Unit 7, Sections 1-3**
9. Determine the shape of molecules and ions (geometry)
10. Determine the bond angles in a compound or ion
11. Determine the polarity of a molecule
12. Determine bond order and bond length
13. Predict solubilities based on polarity
14. Summarize Valence Bond Theory
15. Determine the hybridization about an atom in a compound or ion
16. Determine the number of sigma and pi bond in a compound or ion
17. Describe the MO theory **Unit 7, Section 4**

CHEMICAL EQUATIONS & RXN STOICHIOMETRY-- CHAPTER.SECTION

1. Identify the evidences of a chemical reaction **Unit 8, Sections 2-4**
2. Write formulas (including diatomics) and balance equations (also know parts).
3. Find the moles of the product(s), given the moles of a reactant. (vv)
4. Find the grams of the product(s), given the moles of a reactant. (vv)
5. Find the grams of the product(s), given the grams of a reactant. (vv)
6. Calculate the percentage yield of a rxn. (% yield = actual yield/ theoretical yield x 100)
7. Determine the limiting reagent in a rxn.
8. Use the limiting reagent to calculate the grams and moles (stoichiometry) in a rxn.