



Grade 11 Chemistry Learning Expectations

• 1 - Lab Safety/Technique

- safety
 - safe procedures
 - detecting odors, lighting Bunsen burner, etc.
 - chemical disposal
 - MSDS
 - safety equipment
 - PPE - goggles, aprons, etc.
 - eyewash/shower
- equipment
 - recognition (beaker, flask, test tube, etc.)
 - use (read meniscus, zero scale, hold thermometer, etc.)

2- Energy

- endothermic/exothermic
 - activation energy
 - absorption/emission by electrons
 - ionization energy
 - electron affinity
 - crystal lattice energy
 - bond energy
- lower energy/higher entropy
- Law of Conservation of Energy

3 - Electrostatic Force

- opposite charges attract
 - protons/electrons
 - cations/anions
 - positive dipoles/negative dipoles
- like charges repel
 - in nucleus
 - in electron shells
 - bond angles

- molecule shape

4 - Classification

- heterogeneous/homogeneous
 - elements
 - metal/non
 - natural/synthetic
 - stable/radioactive
 - native/nonnative
 - compounds
 - mixtures
 - solutions
 - solute/solvent
 - solubility
 - concentration
- properties - physical, chemical
- changes - physical, chemical, nuclear
- phases
- acids/bases/salts
 - characteristics
 - pH
 - neutralization
- ionic/covalent
- polar/nonpolar
- reactions types
 - comp, decomp, SR, DR
 - redox/nonredox

5 - Atomic Structure

- atoms
- subatomic particles
- isotopes
- Lewis (electron) dot formulas
- electron configuration
- orbital notation

6 - Periodic Table

- periods
- families
- atomic number
- atomic weight
- mass number
- shell #
- # valence electrons
- metals/nonmetals
- patterns of properties

7 - Bonding

- molecules
- charges
- ions
- ionic bonding
- covalent bonding
 - nonpolar
 - polar
- electronegativity
- oxidation-reduction
 - Law of Conservation of Charge
- octet rule
- VSPER

8 - Names & Formulas

- symbols
- formulas
- subscripts
- common
- Latin
- ionic
- covalent
- acids

9 - Equations

- reactants
- products
- balancing
 - Law of Conservation of Mass
 - coefficients
- ionic equations
- net ionic equations
- spectator ions

10 - Reactions

- causes/controls
- evidence
- types (composition, decomposition, single replacement, double replacement)
- radioactive decay
- nuclear fission and fusion

11 - Moles/Stoichiometry

- moles
- Avogadro's Number
- mole-mole
- mass-mole/mole-mass
- mass-mass
- limiting reagent/reagent in excess
- reactions involving gases (liters)

12 - Gas Laws

- Kinetic Theory
- Characteristics of Gases
- Graham's Law
- STP
- Boyle's Law
- Charles' Law
- Combined Gas Law
- Ideal Gas Law
- Gay-Lussac's Law

- Dalton's Law of Partial Pressure
- Molar Volume

13- Data Manipulation

- measurement (metric)
- graphing
- sources of error
- analyze data
- make inferences
- form conclusions

14 - Problem Solving

- using formulas and set-ups
 - density
 - accuracy (percentage error)
 - moles/stoichiometry
 - isotope abundance
 - molarity
 - energy & wavelength of electromagnetic radiation
 - molecular weight
 - percentage composition
 - empirical formula
 - molecular formula
 - gas laws

15 - Historical/Societal Perspective

- evolution of periodic table
- evolution of atomic theory
- chemical disposal

16 - electrochemistry

- voltaic cells
- electrolytic cells

16 –organic chemistry

- hydrocarbons
- functional group
- organic reactions

