

Smyth County Schools Curriculum Map



Grade:11/12

Subject:Chemistry

	1st Quarter	2nd Quarter
Standards	SOL Ch 1a, 1b, 1c, 1e, 1g, 1i, 1h, 1f, 1d, 2a, 2b, 2c, 2d, 2e, 2f, 2g, 2h, 2i, 5c, 5e	SOL Ch 4a, 4b, 3a, 3b, 3c, 3d, 3e, 5f
Content	Lab safety, using MSDS, lab techniques, measurement, unit conversions, significant figures, scientific method, identification and use of lab equipment, introduction to the periodic table, law of definite proportions, law of multiple proportions, law of conservation of mass, history of atomic theory, isotopes, electron configurations, orbitals, quantum model, periodic table trends and history, electron configurations	Ion formation, ionic bonds, covalent bonds, Lewis structures, naming covalent compounds, molecular geometry, molar mass, Avogadro's number, chemical composition, balancing equations, types of reactions
Skills	<ul style="list-style-type: none"> • Understand that chemicals make up all objects; chemistry is part of daily life • Follow laboratory directions and safety rules • Identify and know how to use common laboratory equipment • Differentiate between chemical and physical properties • Demonstrate knowledge of SI units • Memorize SI prefixes 	<ul style="list-style-type: none"> • Identify cations and anions • Locate oxidation numbers of elements on the periodic table • Form simple ionic compounds • Memorize formulas and charges for polyatomic ions • Write names and formulas of ionic compounds • Differentiate between molecular compounds and ionic compounds; covalent bonds and ionic bonds • Write names and formulas for molecular compounds • Explain the octet rule • Identify polar and nonpolar bonds and molecules • Draw Lewis electron dot structures for atoms and simple molecules • Identify the shapes of molecules as tetrahedral, trigonal pyramidal, trigonal planar, bent, or linear • Understand how the shape and polarity of a molecule affects its physical and chemical properties • Define the mole and Avogadro's number • Calculate molar mass and molecular/atomic/formula unit

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Science

<ul style="list-style-type: none"> • Solve conversion factor problems • Memorize density equation; solve density problems • Differentiate between types of energy, endothermic and exothermic reactions, and physical and chemical changes • Calculate the specific heat of a metal • Understand the difference between accuracy and precision • Identify the precision of different types of glassware • Identify the number of significant figures in given numbers • Solve addition, subtraction, multiplication, and division problems with correct significant figures and scientific notation • Dalton's laws of definite proportions, multiple proportions, and conservation of mass support atomic theory • Important scientific contributions of Thomson, Millikan, Rutherford, Bohr, Democritus • Know charges of protons, neutrons, and electrons 	<p>mass</p> <ul style="list-style-type: none"> • Convert between moles, molecules/atoms, and grams using dimensional analysis • Calculate percentage composition of a molecule or formula unit • Write the empirical formula of a compound when given its molecular formula • Determine the state of matter of a substance in a chemical equation based on symbols • Balance equations • Classify a reaction as combustion, single displacement, double displacement, synthesis, or decomposition
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- Identify the atomic number, mass number, and number of protons, neutrons, and electrons for each element on the periodic table
- Write formulas for isotopes of atoms
- Describe how quantum numbers give the specific location of an electron
- Define Pauli Exclusion principle, Hund's rule, and Aufbau principle
- Write electron configurations and orbital diagrams for elements
- Understand the historical development of the periodic table
- Identify the number of valence electrons each element has
- Identify 6 families on the periodic table
- Prove the trend of reactivity in the alkaline earth metals while completing a lab experiment
- Memorize trends of the periodic table: reactivity, electronegativity, shielding effect, atomic radius, and ionization energies

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Science

Assessment	<ul style="list-style-type: none"> • Notecards • Quizzes • Worksheets • Class activities • Group projects • Laboratories • Chapter tests • Daily learning log 	<ul style="list-style-type: none"> • Notecards • Quizzes • Worksheets • Class activities • Group projects • Laboratories • Chapter tests • Daily learning log
Related Literature	Holt Chemistry chapters 1-4, SOL blueprint, Scope and sequence, and curriculum framework	Holt Chemistry Chapters 5-8, SOL blueprint, Scope and sequence, and curriculum framework

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Science

Technology	Powerpoint presentations Smartboard Videos Web tutorials	Powerpoint presentations Smartboard Videos Web tutorials
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	3rd Quarter	4 th Quarter
Standards	SOL Ch 4b, 4c, 4d, 5a, 5b, 5c, 5d, 5e, 3f	SOL Ch 3e, 3f, 4e, 4g, 5f
Content	Stoichiometry, percent yield, causes of change, states of matter and intermolecular forces, gas laws, kinetic molecular theory	Solutions, chemical equilibrium, energy transfer, acids and bases, reaction rates, oxidation, reduction, electrochemistry, nuclear chemistry
Skills	<ul style="list-style-type: none"> • Solve stoichiometry problems • Solve limiting reactant problems • Understand details of heat transfer: enthalpy and entropy • Solve molar heat problems • Describe how thermodynamics relates to daily life • Determine if a reaction will occur based on entropy, enthalpy, and Gibbs energy • Describe changes in physical and chemical properties during changes of state 	<ul style="list-style-type: none"> • Differentiate between solution and suspension, solvent and solute • Describe characteristics of colloids • Understand the techniques of chromatography and distillation • Calculate the molarity of a solution • Determine solubility of a substance • Understand properties of miscibility and saturation • Describe how ions make a solution conductive, what an electrolyte is • Define hydronium • Describe colligative properties • Explain how surfactants clean objects • Identify reversible reactions • Understand why and how reactions reach equilibrium • Recognize K_{eq} and K_{sp} • Define Le Chatelier's principle • Differentiate between strong and weak acids and bases • Define acids and bases based on Bronsted-Lowry and Lewis definitions • Identify conjugate acids and bases in a chemical equation • Define/identify amphoteric substances

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<ul style="list-style-type: none"> • Describe intermolecular forces • Identify properties of ionic and covalent compounds • Understand how hydrogen bonds are responsible for water's properties • Determine change in enthalpy and entropy • Interpret phase diagrams • Define triple point • Describe properties of gases • Memorize Boyles, Charles, Combined, and Ideal gas laws equations • Solve gas laws problems • Understand different units of measurement for pressure • Define the kinetic-molecular theory 	<ul style="list-style-type: none"> • Calculate pH and pOH when given concentrations of hydronium ions or hydroxide ions • Explain how a titration is used to determine the strength of an acid or base • List different pH indicators • Explain how buffers work • Identify factors that affect reaction rates • Define activation energy, catalysts, and enzymes • Identify oxidation-reduction reactions • Determine the half-life of a radioactive atom • Differentiate between types of radiation • Describe how chemistry is used in geologic dating • Pass released SOL tests
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Subject: Error! Not a valid link.

	<ul style="list-style-type: none"> • Differentiate between diffusion and effusion • Determine partial pressures of combined gases 	
<p>Assessment</p>	<ul style="list-style-type: none"> • Notecards • Quizzes • Worksheets • Class activities • Group projects • Laboratories • Chapter tests • Daily learning logs 	<ul style="list-style-type: none"> • Notecards • Quizzes • Worksheets • Class activities • Group projects • Laboratories • Chapter tests • Daily learning logs
<p>Related Literature</p>	<p>Holt Chemistry chapter 9-12, SOL blueprint, Scope and sequence, and curriculum framework</p>	<p>Holt Chemistry chapters 13-18, SOL blueprint, Scope and sequence, and curriculum framework Princeton Review's Cracking the Chemistry SOL</p>

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Technology	Powerpoint presentations Smartboard Videos	Powerpoint presentations Smartboard Videos
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