

## Chemistry 8 Learning Outcomes

<b>KINETIC MOLECULAR THEORY (Chem 8 - 1)</b>	
<b>Level 2</b>	
	I know the 3 states of neutral matter.
	I know the terminology to describe state changes.
	I can describe the speed, spacing, and attraction of particles in each state of matter, and relate these to temperature/energy.
	I can measure mass and volume accurately
	I can use density to predict floating and sinking behaviour.
	I can identify chemical and physical changes using evidence.
<b>Level 3</b>	
	I can use my knowledge of KMT to explain expansion, contraction, and state changes at the molecular level.
	I can calculate the density of a substance
	I can explain <b>convection</b> and <b>conduction</b> as methods of heat transfer, using the ideas of density and KMT.
	I can use the particle model to explain the differences between chemical and physical change

<b>ELEMENTS &amp; THE PERIODIC TABLE (Chem 8 – 2)</b>	
<b>Level 2</b>	
	I can describe matter using qualitative and quantitative properties
	I can use the periodic table to identify element names and symbols
	From a box on the periodic table, I can locate the atomic mass and atomic number of an element.

	I can connect atomic number and mass to the numbers of protons, neutrons, and electrons in an atom
	I can use the standard model to identify quarks, bosons, and leptons.
	I can associate elementary particles with appropriate fundamental forces
<b>Level 3</b>	
	I can draw a Bohr model, showing P, N, and e <sup>-</sup> , for neutral elements 1-20.
	I can summarize the major discoveries that contributed to our current understanding of atomic structure.
	I can use the properties of quarks to predict which combinations will produce protons and neutrons.
	I can use the properties of quarks to predict stable hadrons and baryons.

## Chemistry 9 Learning Outcomes

*Review the language of classification of matter: element, compound, mixture, pure substance*

*Revisit Chem & Phys change – not necessarily for assessment purposes.*

<b>ATOMS &amp; IONS (Chem 9 - 1)</b>	
<b>Level 2</b>	
	I can identify the following families on the periodic table: halogens, noble gases, alkali metals, alkaline earth metals. I know where the transition metals live.
	I know which elements live as single atoms, and which exist as diatomic or polyatomic species (think: HOFBrINCl, P & S)
	I can identify metals, non-metals, and semi-metals from their locations on the periodic table.
	I can use a box on the periodic table to identify the protons, neutrons, and electrons in a species.
<b>Level 3</b>	
	I can draw a Bohr model for a neutral atom, with the right number of protons, neutrons, and electrons in the right places.
	I can recognize & communicate patterns in electron arrangement within a family or within a period.
	I can identify the number of neutrons in different isotopes of an element.
	I can explain how and why atoms make ions. I can predict the common ion charges of elements in groups 1, 2, 13-18.
	I can draw a Bohr model for an ion.
<b>COMPOUNDS (Chem 9 - 2)</b>	
<b>Level 2</b>	
	I can use a chemical formula to decide whether a compound is ionic or covalent.

	I can tell, from a chemical formula, how many of each type of atom or ion are present.
	I can predict the chemical formula of an ionic compound, given the elements or ions involved.
	I can write names and formulae for ionic compounds involving <b>elements</b> from groups 1, 2, 13-17.
<b>Level 3</b>	
	I can explain the difference between ionic and covalent bonding, with reference to the electrons involved.
	I can write names and formulae for all ionic compounds, including multivalent metals (transition metals) and polyatomic ions. I know when to use each rule set.

## Chemistry 10 Learning Outcomes

*Review Bohr model of atoms and ions as a prerequisite skill.*

<b>IONIC &amp; COVALENT BONDING (Chem 10 - 1)</b>	
<b>Level 2</b>	
	1. I can explain the difference between ionic and covalent bonding, with reference to the electrons involved.
	2. I can recognize the difference between ionic and covalent compounds based on their formulae
<b>Level 3</b>	
	I can illustrate ionic and covalent bonding using Lewis diagrams

<b>IONIC &amp; COVALENT NOMENCLATURE (Chem 10 - 2)</b>	
<b>Level 2</b>	
	I can name and write formulae for simple binary ionic compounds
<b>Level 3</b>	
	I can write names and formulae for all ionic compounds, including multivalent metals (transition metals) and polyatomic ions.
	I can write names and formulae for covalent (molecular) compounds, using prefixes.
	I know when to use each rule set.

<b>CHEMICAL REACTIONS (Chem 10 - 3)</b>	
<b>Level 2</b>	
	I can identify the products and reactants in a chemical change
	I can represent a chemical change by writing a skeleton equation
	I can convert between word equations and formula equations

	I can explain and apply the law of conservation of matter.
	I can classify reactions as either: synthesis, decomposition, single or double replacement, combustion, or neutralization.
	I can recognize whether a reaction is exothermic or endothermic from observations.
<b>Level 3</b>	
	I can balance a variety of chemical reactions, to show conservation.
	I can predict the products of a chemical reaction
	I can sketch a simple energy diagram for an exothermic or endothermic process, and label the activation energy and enthalpy change (*we disagree with this being in 10)

<b>ACIDS AND BASES (Chem 10 - 4)</b>	
<b>Level 2</b>	
	I can identify acids and bases based on chemical formulae and/or names
	I can identify acids and bases based on common tests and properties (bitter/sour, conductivity, indicator tests, metals tests, etc.)
	I know some common uses of acids and bases
	I can recognize which pH levels represent acids, bases, and neutral compounds
<b>Level 3</b>	
	I can name and write formulae for common acids
	I can relate points on the pH scale to quantities of H <sup>+</sup> or OH <sup>-</sup> ions in solution (general, not specific concentration)

	I can write balanced neutralization reactions for acid-base reactions
--	---