

item	Performance/Task: The student will:	text sections
<b>General</b>		
1	Know the definitions and characteristics of "science" and "chemistry."	1.1
2	Be able to describe the scientific method and the distinctions between "hypothesis", "theories" and "laws"	1.2
3	Know the definitions of and distinctions between of the following: "substance", "homogeneous mixture", "heterogeneous mixture", "element", "compound", "solid", "liquid", "gas"	1.3
4	Be able to distinguish between the three major phases of matter, solids, liquids and gases by their specific properties	1.5
5	Be able the distinguish between a physical and a chemical change and the types and roles of energies.	1.5
<b>Units</b>		
6	Know the SI base units and unit symbols for mass, length, temperature, amount, time and charge and the unit prefixes M, k, c, m, $\mu$ , and n. Know what is meant by a "derived unit"	1.6
7	Know the equation which defines density and be able to use it in calculations.	1.6
<b>Significant Figures</b>		
8	Know what is meant by significant figures, least significant figure and be able to express a written number with the correct number of digits..	1.7
9	Know how to determine the correct number of significant figures when adding, subtracting, multiplying and dividing quantities.	1.7
<b>Unit Conversions</b>		
10	Be able to interconvert between temperatures in degrees celcius, degrees fahrenheit and kelvins	1.6
11	Be able to apply the principles of quantity calculus, i.e. unit factor, to multiplicative interconversion of units.	1.8
<b>Introduction to Atomic and Molecular Structure</b>		
12	Be able to describe the modern atomic theory and the law pertaining to it	2.1-2.4
13	Know the characteristics of charge and mass of protons, neutrons and electrons.	2.5
14	Know the composition and general construction of atoms and how in general atoms are related to elements, isotopes and compounds.	2.5
15	Be able to write and interpret the nuclear symbol conventions, e.g. ${}^2\text{H}$ ,	2.5
16	Be able to tell what an ion is and what the charges of simple mono-atomic ions are.	2.6

<b>Avogadro's Number, <math>N_A</math>, Molar Mass, <math>M</math>, and Moles, <math>n</math></b>		
17	Be able to obtaining the molar masses, $M$ , from the periodic chart.	2.7, 2.8
18	Be able to distinguish between ionic and covalent compounds and be able to write their chemical symbolism	3.2-3.4
<b>Naming and Oxidation Numbers</b>		
19	Be able to distinguish between ionic, covalent and mixed compounds	3.5
20	Be able to name simple common ionic and covalent compounds .	3.5
21	Be able to determine is a compound is an Arrhenius acid, an Arrhenius base or neither.	3.5*
22	Know the rules for determining oxidation numbers (including the polyions) and be able to apply them.	3.5, 4.9, lab man
23	Know the rules for naming compounds (including the polyions) by the IUPAC convention and be able to apply them.	3.5, 3.6, lab man
<b>Compound Stoichiometry</b>		
24	Be able to calculate the molar mass of a compound	3.7
25	Know what is meant in chemistry by % and be able to calculate or interconvert between % of element in a compound and its stoichiometric formula.	3.7, 3.8
<b>Reaction Stoichiometry</b>		
26	Know what is meant by a chemical reaction and the symbolism used to describe a reaction	3.10
<b>Net Ionic Reactions and Brønsted-Lowry acid and bases</b>		
27	Be able to formula the net ionic reaction from an overall reaction	3.5*
28	Be able to write the Brønsted-Lowry acid-base reaction from the Arrhenius reaction	3.5*
* These materials are supplimented with a handout. ( <a href="http://www.genchem.net/handouts/acidbase.pdf">www.genchem.net/handouts/acidbase.pdf</a> )		