

Chemistry 11 – Unit 5—The Mole Concept
Unit Outline

Topic	Activity
Introduction to Unit 5	Hydrogen Bomb Demonstration using different H ₂ /air ratios.
History of Atomic Mass	Brief Explanation of Dalton's Relative Masses. See p. 77 SW. Gay-Lussac's Combining Volumes. See p. 77 SW. Avogadro's Hypothesis. See p. 77 SW. Do Ex. 3 & 4 on p. 78 of SW.
Definition of a Mole	Class Explanation of Definition of a Mole. See p. 83 SW.
Molar Mass & Moles	Definition of Molar Mass. See p. 79 SW. Calculations of Molar Mass using Atomic Masses. See p.79 SW. Do Ex. 6 (a-h) and 7 (a-b) on p. 80 of SW. Class Examples of Grams \rightleftharpoons Moles conversions. See p. 81 SW. Do Ex. 8 (a-d), 9 (a-f) and 10 (a-c) on p. 82 of SW. Do Experiment 4B—Moles of Iron and Copper
Molar Volume & Moles	Class Explanation of Standard Temperature and Pressure (STP) and Molar Volume of Gases. See p. 82-83 of SW. Do Ex. 11 (a-c) and 12 (a-c) on p. 83 of SW. Class Examples of Combination Mass \rightleftharpoons Mole \rightleftharpoons Volume Calculations. Hand-In Assignment # 4 – Mass-Mole-Volume Conversions Do Experiment 7B—The Molar Volume of a Gas
Moles, Molecules and Atoms	Class Explanation of Conversions between Moles \rightleftharpoons Molecules and between Molecules \rightleftharpoons Atoms. See p. 83-85 of SW. More Class Examples of Combination Mole Problems Do Ex. 15 (a-d), 16 (a-b), 17 (a-b), 18 (a-c) and 19 p. 84-85 SW. Class "Mole Conversion Diagram" and Multiple Mole Conversions. See p. 85-86 of SW. Do Ex. 22 (a-b), 23 (a-d) and 24 (a-d) on p. 86-87 of SW.
Density & Mole Calculations	Review of Density and Explanation of how it relates to Mole Calculations. See p. 87-88 of SW. Do Ex. 25, 27, 28 and 29 on p. 88 of SW.
Mole Conversion Summary	Do selected exercises from page 88-90 in SW. Hand-In Assignment #5 – Summary of Mole Conversions

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Percent Composition and Empirical Formulas	<p>See Examples on p. 90 of SW. See Tutorial 5-1 (Section on % Composition) – Handout Do Ex. 44 (a, g & n) and 45 (b) on p. 91 of SW. Go over the section on Empirical and Molecular Formulas in Tutorial 5-1. Do the Self-Test on Tutorial 5-1 See examples on pages 91-95 of SW. Do Ex. 46 (d, g & m) on p. 93 & Ex. 48 and 52 on p. 95 of SW. Do Experiment 5-1 - Percent Oxygen in KClO_3</p>
Molar Concentration	<p>Class review of solutions, solutes and solvents. Explanation of Molar Concentration and Calculations. See p. 96-98 in SW. Do Ex. 59 (b, d & f), 60 (c & e), 62 & 64 on p. 98 of SW.</p>
Dilution Calculations	<p>Class Explanation of the Dilution Formula. See pages 100-101 in SW. Do Ex. 78, 82, 89, & 91 on p. 102-103 of SW.</p>
Summary and Test	<p>Do Hand-In Assignment #6—Percent Composition, Empirical and Molecular Formulas, Molarity and Dilution Calculations</p> <p>Do a Review of Unit 5</p> <p>Test on Unit 5</p>