

Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Science	Course:	Chemistry I (H)	Unit 1 Title:	Nature of Science	Grade Level(s):	10th
Assessed Trimester:	Trimester A	Pacing:	1 Trimester (Tri A)	Date Created:		Last Revision Date:	6/17/2013

Course Understandings: *Students will understand that:*

- Problems can be solved and knowledge gained in a systematic way: solutions to one problem can create new questions and problems.
- Chemistry is recognized as significant in its application to other disciplines and the world.
- Ideas are expressed symbolically, numerically, and graphically.
- Behavior and properties of materials are organized, classified, and predicted utilizing periodic trends.
- Mathematical relationships are interpreted and manipulated to model the real world.
- The basic building blocks combine and recombine in a variety of ways to make all matter from the simple to the complex.
- The laws of chemistry predict outcomes that impact and apply to daily life.

DESIRED RESULTS (Stage 1) - WHAT WE WANT STUDENT TO KNOW AND BE ABLE TO DO?

Established Goals	
<ul style="list-style-type: none">• Standard: Interactions Among Science, Technology, Engineering, Mathematics, and Society Developments in chemistry affect society and societal concerns affect the field of chemistry. 9C.1.3.4.1: Use significant figures and an understanding of accuracy and precision in scientific measurements to determine and express the uncertainty of a result. 9.1.3.4.5: Demonstrate how unit consistency and dimensional analysis can guide the calculation of quantitative solutions and verification of results. 9C.1.3.3.1: Explain the political, societal, economic and environmental impact of chemical products and technologies. <p>Literacy Standards:</p> <ul style="list-style-type: none">9.13.9.9: Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. (discuss models)9.14.4.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to discipline, task, purpose, and audience.9.14.5.5: Use a writing process to develop and strengthen writing as needed by planning, drafting, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience, and appropriate to the discipline.9.14.6.6: Use technology, including, but not limited to, the Internet, to produce, publish, and update individual or shared writing products and multi-media texts, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.	
Transfer	
Students will be able to independently use their learning to: (product, high order reasoning) <ul style="list-style-type: none">• Use significant figures and dimensional analysis in problem solving. [9C.1.3.4.1 & 9.1.3.4.5]	
Meaning	
Unit Understanding(s): Students will understand that: <ul style="list-style-type: none">• The field of chemistry has had a major impact on all areas of modern life. [9C.1.3.3.1]• Significant figures reflect the accuracy of a measuring tool. [9C.1.3.4.1]• Unit conversions can be used to guide problem solving. [9.1.3.4.5]	Essential Question(s): Students will keep considering: <ul style="list-style-type: none">• How have chemical products influenced politics, the economy, the environment, and society? [9C.1.3.3.1]• Why are careful measurements and calculations essential to success in scientific fields? [9C.1.3.4.1] [9.1.3.4.5]• How do you determine significant figures in chemical calculations? [9C.1.3.4.1]

Acquisition	
Knowledge - Students will: <ul style="list-style-type: none">Identify and use significant figures. [9C.1.3.4.1]Know measurement concepts and units using the metric system. [9.1.3.4.5]Understand precision and accuracy in measurement. [9C.1.3.4.1] Reasoning - Students will: <ul style="list-style-type: none">Use chemical principles to explain the political, societal, economic and environmental impact of chemical products and technologies. [9C.1.3.3.1]Identify accuracy and precision in data. [9C.1.3.4.1]Determine precision of measuring tools based on significant figures in a measurement. [9C.1.3.4.1]	Skills - Students will: <ul style="list-style-type: none">Record measurements that reflect the measuring tool used and the uncertainty associated with that measuring tool.[9C.1.3.4.1]Perform calculations using the rules of significant figures.[9C.1.3.4.1]Perform unit conversions using dimensional analysis. [9.1.3.4.5]

Common Misunderstandings <ul style="list-style-type: none">Measurement is only linear.Any quantity can be measured as accurately as you want.Children who have used measuring devices at home already know how to measure.The metric system is more accurate than other measurement systems (such as the English system).The English system is easier to use than the metric system.You can only measure to the smallest unit shown on the measuring device.Some objects cannot be measured because of their size or inaccessibility.The five senses are infallible.An object must be “touched” to be measured.A measuring device must be a physical object.Mass and weight are the same and they are equal at all times.Mass and volume are the same.There is only one way to measure perimeter.Only the area of rectangular shapes can be measured in square units.You cannot measure the volume of some objects because they do not have “regular” lengths, widths, or heights.An object’s volume is greater in water than in air.The density of an object depends only on its volume.Density for a given volume is always the same.The density of two samples of the same substance with different volumes or shapes cannot be the same.	Essential new vocabulary <ul style="list-style-type: none">Significant FiguresSignificant DigitAccuracyPrecisionUncertaintyInternational System of Units (SI)DensityTechnology
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