

Unit 1: Foundation Building-Chemistry

Content Area: **Science**
Course(s): **Chemistry CP**
Time Period: **September**
Length: **4 weeks**
Status: **Published**

Transfer

Providing a methodology of scientific measurements, data collection, and application. Students will learn safety procedures, measurement units, scientific notation, significant figures, accuracy and precision, and dimensional analysis.

Enduring Understandings

Chemistry explains the natural world.

Solving problems requires an appreciation of the big picture.

Dimensional Analysis is a useful tool.

Essential Questions

Are all laboratory activities approached in the same manner?

Why is Chemistry important?

Why is it necessary to use a common set of measurement units?

How do scientists express the degree of uncertainty in their measurements?

To what extent is data reliable?

How is dimensional analysis used to solve problems in Chemistry?

Content

Vocabulary

Intensive and extensive property

Accuracy, precision, accepted value, experimental value, significant figures, dimensional analysis

Learning Objectives

SWBAT:

Appropriately use measurement tools in the laboratory.

Record measurements to the correct number of sig figs, use rules for sig figs in calculations to correctly round off numbers.

Identify and use SI units in calculations.

Solve problems by Dimensional Analysis.

Apply Conversion Factors to solve problems.

Illustrate data using graphing techniques.

Calculate percent error.

Solve density problems using regular and irregular objects.

Identify the different types of graphs and how they are used in chemistry.

Standards

SCI.9-12.5.1.12	All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.
SCI.9-12.5.1.12.A	Students understand core concepts and principles of science and use measurement and observation tools to assist in categorizing, representing, and interpreting the natural and designed world.
SCI.9-12.5.1.12.A.1	Refine interrelationships among concepts and patterns of evidence found in different central scientific explanations.
SCI.9-12.5.1.12.B	Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.
SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.C	Scientific knowledge builds on itself over time.
SCI.9-12.5.1.12.C.1	Reflect on and revise understandings as new evidence emerges.
TECH.8.1.8	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.8.A.2	Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.
TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.A.1	Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
TECH.8.1.12.A.2	Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.
TECH.8.1.12.A.3	Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.
TECH.8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.
TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
WORK.9-12.9.1.12	All students will demonstrate creative, critical thinking, collaboration and problem solving skills to function successfully as global citizens and workers in diverse ethnic and organizational cultures.
WORK.9-12.9.1.12.A	Critical Thinking & Problem Solving

WORK.9-12.9.1.12.A.1	Apply critical thinking and problem-solving strategies during structured learning experiences.
WORK.9-12.9.1.12.A.2	Participate in online strategy and planning sessions for course-based, school-based, or outside projects.
WORK.9-12.9.1.12.A.3	Assess how a variety of problem-solving strategies are being used to address solutions to global problems by participating in online discussions with peers from other countries.
WORK.9-12.9.1.12.A.4	Justify problem-solving strategies used in the development of a particular innovative product or practice in the United States and in another country.
WORK.9-12.9.1.12.C	Collaboration, Teamwork and Leadership
WORK.9-12.9.1.12.C.1	Enlist input from experts in the field, community members, and other stakeholders to design a service-learning activity that addresses a local, national, or worldwide need.
WORK.9-12.9.1.12.C.2	Analyze the common traits of effective state, national, or international leaders.
WORK.9-12.9.1.12.C.3	Explain why some current and/or past world leaders have had a greater impact on people and society than others, regardless of their countries of origin.
WORK.9-12.9.1.12.C.4	Demonstrate leadership and collaborative skills when participating in online learning communities and structured learning experiences.
WORK.9-12.9.1.12.C.5	Assume a leadership position by guiding the thinking of peers in a direction that leads to successful completion of a challenging task or project.

Assessments

Quizzes

Formative: Other Evidence: Other: Quiz

Quizzes will be given on Matter and Measurement

Physical and Chemical Changes

Formative: Other Evidence: Performance: Lab Assignment

Lab Activity

Unit Test- Chapter 3 in textbook

Summative: Transfer Tasks: Test: Common

Chapter test on Matter and Measurement

Safety Lab

Formative: Other Evidence: Performance: Lab Assignment

Calculate Density Lab

Formative: Other Evidence: Performance: Lab Assignment