

7 Science Unit 2: Matter

Content Area: **Science**
Course(s):
Time Period: **Marking Period 2**
Length: **9 Weeks**
Status: **Published**

Unit Overview

The Composition of Matter

Analyze the properties of three different materials to identify the best material for a makeup pen to be used to transform actors into aliens. Then, write a pitch promoting the material you chose by describing its solubility, density, and suitability to use as alien makeup. Additionally, research the chemical formula and structure of a substance that makes up your material.

States of Matter

The particle motion of atoms and molecules results in the three common states of matter that can be observed—solid, liquid, and gas. Write a letter to an alien visiting Earth that explains how a molecule of water on Earth changes state and compares with state changes on the alien's planet.

Chemical Reactions

The newest season of "The Next Top Survivalist" is looking for contestants, and you've been asked to audition! To prepare, you will explore how chemical reactions can help people survive when caught unaware in the wilderness.

Standards

Science and Engineering Practices

- Analyzing and Interpreting Data
- Asking Questions and Defining Problems
- Constructing Explanations and Designing Solutions
- Developing and Using Models
- Engaging in Argument from Evidence
- Obtaining, Evaluating, and Communicating Information
- Planning and Carrying Out Investigations
- Using Mathematics and Computational Thinking

Crosscutting Concepts

- Cause and Effect
- Patterns
- Scale, Proportion, and Quantity
- Stability and Change
- Structure and Function

- Stems and System Models

SCI.MS-ETS1-4	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
SCI.MS-ETS1-1	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
SCI.MS-ETS1-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
SCI.MS-ETS1-3	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
SCI.MS-PS1-1	Develop models to describe the atomic composition of simple molecules and extended structures.
SCI.MS-PS1-2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
SCI.MS-PS1-5	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
SCI.MS-PS1-3	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
SCI.MS-PS1-6	Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.
SCI.MS-PS1-4	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

Materials

Core Materials:

- TCI Matter Text and Online Resources
 - The Atmosphere and Energy
 - Weather
 - Climate
- Teacher Created Labs

Supplemental Materials:

- [Gizmos](#)
- [BrainPop resources](#)
- [GRC Lessons](#)
- [Nearpod Activities](#)

Technology

CS.6-8.8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.
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CS.6-8.8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem.
CS.6-8.8.2.8.ED.3	Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).
TECH.9.4.8.CT.1	Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).
TECH.9.4.8.IML.1	Critically curate multiple resources to assess the credibility of sources when searching for information.

Evidence of Learning/Assessment

Formative Assessment

- Teacher Observation
- Quizzes
- Exit Tickets
- Labs

Summative Assessment

- Unit Tests
- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

Follow IEP Plan which may contain some of the following examples...

- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe
- Newsela leveled reading passages

Follow 504 Plan which may contain some of the following examples...

- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
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- Scribe

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe

At-risk of Failure

- Extra time during intervention
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
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- Study Guides
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Gifted & Talented

- Independent projects

- STEM Projects

Interdisciplinary Connections

Connections to NJSL - English Language Arts

Reading

RI.7.1. Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.

RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

RI.7.7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue. RI.6.8. Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.

RI.7.9. Compare, contrast and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).

Writing

W.7.1. Write arguments to support claims with clear reasons and relevant evidence.

W.7.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

Connections to NJSL - Mathematics

Math Practices

Make sense of problems and persevere in solving them.

Construct viable arguments and critique the reasoning of others.

Use appropriate tools strategically.

Career Readiness, Life Literacies, and Key Skills

TECH.9.4.8.DC.1	Analyze the resource citations in online materials for proper use.
TECH.9.4.8.TL.1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
TECH.9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

Career Ready Practices

- CRP2. Apply appropriate academic and technical skills.

- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence