Marietta City Schools

District Unit Planner

Grade 2 Science

Theme	*Unit 3 What is Matter and How Does it Change Planner*	**Unit duration**	*8 weeks*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GaDoE Standards/3D Science Elements

S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects.
a. Ask questions to describe and classify different objects according to their physical properties.
(Clarification statement: Examples of physical properties could include color, mass, length, texture, hardness, strength, absorbency, and flexibility.)
b. Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.
c. Provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible.
(Clarification statement: Changes in matter could include heating or freezing of water, baking a cake, boiling an egg.)

Unit Objectives:
Students will understand the defining characteristics of solids, liquids, and gases.
Students will understand how to create changes in states of matter through various ways such as cooling, heating, and mixing and why those changes are important in our daily lives.
Students will know how to determine if the changes are reversible or irreversible.

Unit Phenomena:
Changes in Matter video
This link takes you to a Discovery Education Science Techbook video. Remember to use your Google credentials when logging into your DE account.
Have students watch the short video without sound. You may choose to watch the video a second time and pause as you record what students notice and wonder.

Page Keeley Probes: : These probes can be used as phenomena. They are intended to elicit student understanding about science concepts. Starting a unit or lesson with a probe will help you uncover misconceptions and see what students already know about a topic. Using a probe at the beginning of a lesson and then at the end of the lesson serves the purposes of pretesting and then formatively evaluating student thinking. **Below is a list of probes from Page Keeley's book Uncovering Student Ideas in Primary Science, that are appropriate for this unit.** This book has been purchased for your grade level by the Office of Academic Achievement.
- **Is it Matter?**

• **Snap Blocks**

Science & Engineering Practices:	**Disciplinary Core Ideas:**	**Crosscutting Concepts:**
• Asking questions and defining problems • Planning and carrying out investigations • Developing and using models • Obtaining, evaluating, and communicating information • Constructing explanations and designing solutions	• Structure and properties of Matter • Heating or cooling can change the properties of matter	• Matter and Change • Stability and Change

Misconceptions:

· Matter does not change.
· Students may believe that water must be boiled in order to change from a liquid to a gas.
· Freezing only happens when it is cold.

Math/ELA Connections/STEM Connections

ELAGSE2RI5: Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
ELAGSE2RI6: Identify the main purpose of a text, including what the author wants to answer, explain, or describe. ELAGSE2RI7: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
ELAGSE2RI8: Describe how reasons support specific points the author makes in a text.
ELAGSE2W2: Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
ELAGSE2W7: Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
ELAGSE2W8: Recall information from experiences or gather information from provided sources to answer a question.
ELAGSE2SL1: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
ELAGSE2SL2: Recount or describe key ideas or details from written texts read aloud or information presented orally or through other media.
ELAGSE2L4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional). e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
MGSE2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
MGSE2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
MGSE2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

STEM:

The Mitten Challenge
STEM Project Starter: Melting Chocolate
Tower Challenge

Discovery Education Science Techbook Resources: *(You will need to be logged into your Discovery Education account using your Google credentials to access these links*) You will find station rotation activities such as leveled reading passages, interactives, hands-on labs, virtual labs, video clips, and more on the **Explore** page of each Techbook unit.

Changes in Matter Click the Explore tab, then Explore More Resources to find video clips, reading passages, hands-on activities, computer interactive activities, and a fun song.
Heat
Investigating Melting

Hands-on Activities
Melting Ice in Sun and Shade
The Sun Warms the Earth
Forms of Water
The Right Stuff
Build a Birdhouse or Bird Feeder
Measuring with Blocks

More Activity Ideas:
PBS States of Matter Interactive
Changing States Exploration
Things that Change Fundamental

Essential Questions

Factual—

What are the states of matter?

How do scientists classify different objects according to their physical properties?

Inferential—

What changes at the molecular level when substances change states of matter?

Critical Thinking-

Provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling are irreversible.

Tier II Words- High Frequency Multiple Meaning	**Tier III Words-** Subject/ Content Related Words
solid, liquid, gas, matter, heating, cooling, freezing, boiling, energy, change, visual, color, mass, length, texture, hardness, strength	Properties, characteristics, stability, absorbency, flexibility, structure, reversible, irreversible

Assessments

Using Materials Constructed Response Assignment
Constructed Response: Heat
Constructed Response: Heat II
End of Unit Assessment
Below is a link for an anticipation guide. Please use this as a pre and post assessment for your students. It is a word document and can be edited to meet the needs of your students.

Anticipation Guide

*Teachers can access the anticipation guides and assessments via the grade level Schoology Course.

Objective or Content	**Learning Experiences**	**Differentiation Considerations**
CLE 1: S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects.	GaDOE Matter Instructional Segment In this Georgia DOE lesson, students will investigate physical properties of objects. Students will determine which properties are best for certain projects. Students will build structures and assemble and disassemble structures. Students will observe how matter goes through reversible and irreversible changes.	Student Choice Performance Tasks Reflection and Goal Setting Learning Stations Choice Boards Formative Probes Science Journaling Multi-sensory activities Assistive Technology Flexible Grouping Multiple Means of Representation

Recommended High Quality Complex Text By Lexile Band

What is Motion? By Natalie Hyde

What are Newton's Laws of Motion? By Denyse O'Leary

Push and Pull with Big Machines By Nicola Lopetz

Stone Age Science: SImple Machines By Gerry Bailey and Felicia Law

Force and Motion Through Infographics By Rebecca Rowell

Science Lab: Motion and Force By Rebecca Hirsch