

Unit 1: Properties of Matter

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

Disciplinary Core Ideas

PS1.A: Structure and Properties of Matter

Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1) 

The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2) 

Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)

Standards

LA.5.W.5.8	Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
LA.5.W.5.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
TECH.8.1.5.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media
SCI.5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.
LA.5.RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
TECH.8.1.5.F.CS2	Plan and manage activities to develop a solution or complete a project.
MA.5.5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
MA.5.5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
MA.5.5.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.
MA.5.5.NBT.A.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
LA.5.W.5.7	Conduct short research projects that use several sources to build knowledge through investigation of different perspectives of a topic.
TECH.8.1.5.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.
SCI.5-PS1-3	Make observations and measurements to identify materials based on their properties.
CAEP.9.2.8.B.1	Research careers within the 16 Career Clusters [®] and determine attributes of career success.

Objectives and Essential Questions

Student Learning Objectives

- A) SWBAT make observations and measurements to identify materials based on their properties.
- B) SWBAT develop a model to describe that matter is made of particles too small to be seen.

Essential Questions

When matter changes, does it's weight change?

How can properties be used to identify materials?

What kind of model would best represent/describe matter as made of particles that are too small to be seen?

Concepts

Part A

- Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
- Measurements of a variety of properties can be used to identify materials.(At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.)

Part B

- Natural objects exist from the very small to the immensely large.
- Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by means other than seeing.
- A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.

Activities and Lessons

Mystery Science Explorations, Activities and Optional Extras

Mystery Science Chemical Magic Mystery 1 - Could you transform something worthless into gold? (Intro to Chemistry)

Mystery Science Chemical Magic Mystery 2 - What would happen if you drank a glass of acid? (Acids, Reactions and Properties of Matter)

(5-PS1-1)

5th Grade NGSS Notebook

Introducing Matter

Matter Bundle

What are Substances Made From - Lesson 1 Activity 1 and 2

(5-PS1-2)

Matter Bundle

States of Matter - Activity 1 and 2

What Happens When Substances Change State? - Activity 1

5th Grade NGSS Notebook

Conservation of Matter #1 - #4

(5-PS1-3)

Matter Bundle

Elements and Their Properties

5th Grade NGSS Notebook

Physical Properties of Matter

Physical Properties Lab

Mineral Identificaiton

Experiment Ideas

Making Ice Cream (5-PS1-2)

Making Slime (5-PS1-2)

Inquiry Project - Investigating Water Transformations (5-PS1-2)

<https://inquiryproject.terc.edu/curriculum/curriculum5/>

Disolving Matter - Now you see it, Now you dont! <https://betterlesson.com/lesson/636182/now-you-see-it-now-you-don-t-dissolving-matter>

Materials and Resources

www.mysteryscience.com

-Mystery Science - Chemical Magic Mystery 1 and 2

-5th Grade NGSS Interactive Science Notebook

-NGSS Matter and It's Interactions

Youtube, Brainpop Videos

STEM experiments: <http://www.siemensstemday.com/educators/activities?g=5&sort=level&sortd=DESC>

NJ Model Curriculum Sample of Open Education Resources - Material

Properties: http://www.bbc.co.uk/bitesize/ks2/science/materials/material_properties/play/

Assessment

Part A

Students who understand concepts can

- Measure and describe physical quantities such as weight, time, temperature, and volume.
- Make observations and measurements to produce data that can serve as the basis for evidence for an explanation of a phenomenon.
- Make observations and measurements to identify materials based on their properties.

Examples of materials to be identified could include: □

Baking soda and other powders, Metals, Minerals, Liquids Examples of properties could include: Color, Hardness, Reflectivity, Electrical conductivity, Thermal conductivity, Response to magnetic forces, Solubility

Part B

Students who understand concepts can

- Develop a model to describe phenomena.
- Develop a model to describe that matter is made of particles too small to be seen. (Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.)

Examples of evidence could include: □

Adding air to expand a basketball, Compressing air in a syringe, Dissolving sugar in water, Evaporating salt water

Assessment Options

-Mystery Science Assessment - Chemical Magic Assessments Tab

Mystery 1, Mystery 2, Summative Assessment

-NGSS Mater Bundle

-NGSS 5th Grade Science Notebook

Accommodations and Modifications

Group lab/experiment groups

Additional time for classwork

Additional time for assessments

Tests in small group

Use of videos and visual models

Preferential seating

Notes/outlines provided