

Big Idea: Properties of Matter – Grading Period 2**Inquiry Questions**

Science:

- How do we use our senses to describe and classify objects?
- How do we know if materials are solid, liquids, or gas?
- How can you separate liquids and solids?
- Why do vibrating materials make sound?
- How does light help you see objects?

Technology:

- How do tools contribute to changing matter?

Engineering:

Content Area Grade Level Standards

Science	<p>K.PS.1 Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about these objects.</p> <p>1.PS.1 Characterize materials as solid, liquid, or gas and investigate their properties, record observations and explain the choices to others based on evidence (i.e., physical properties.)</p> <p>1.PS.2 Predict and experiment with simple methods (sieving, evaporation) for separating solids and liquids based on their physical properties.</p> <p>1.PS.3 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sounds can make materials vibrate.</p> <p>1.PS.4 Make observations to collect evidence and explain that objects can be seen only when illuminated.</p>
Technology	<p>SLT 4.A The use of tools and machines can be helpful or harmful.</p> <p>SLT5.A Some materials can be reused and/or recycled.</p>
Engineering	<p>SLT9.B Expressing ideas to others verbally and through sketches and models is an important part of the design process.</p> <p>SLT 10.A Asking questions and making observations helps a person to figure out how things work.</p> <p>SLT 12.A Discover how things work.</p> <p>SLT 13.A Collect information about everyday products and systems by asking questions.</p>

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Mathematics

1.G.2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. **(Students do not need to learn formal names such as “right rectangular prism.”)**

1.MD.2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

1.MD.1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.

1.NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

1.MD.3. Tell and write time in hours and half-hours using analog and digital clocks.

1.MD.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Social Studies

1.1.7 Explain that clocks and calendars are used to measure time.

1.3.5 Observe and record the weather on a daily basis.

ELA

Reading: Informational Text

CCSS.ELA-Literacy.RI.1.1 Ask and answer questions about key details in a text.

CCSS.ELA-Literacy.RI.1.2 Identify the main topic and retell key details of a text.

CCSS.ELA-Literacy.RI.1.3 Describe the connection between two individuals, events, ideas, or pieces of information in a text.

CCSS.ELA-Literacy.RI.1.4 Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.

CCSS.ELA-Literacy.RI.1.5 Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

CCSS.ELA-Literacy.RI.1.6 Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

CCSS.ELA-Literacy.RI.1.7 Use the illustrations and details in a text to describe its key ideas.

CCSS.ELA-Literacy.RI.1.8 Identify the reasons an author gives to support points in a text.

CCSS.ELA-Literacy.RI.1.9 Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).

CCSS.ELA-Literacy.RI.1.10 With prompting and support, read informational texts appropriately complex for grade 1.

Writing

CCSS.ELA-Literacy.W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

CCSS.ELA-Literacy.W.1.5 With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.

CCSS.ELA-Literacy.W.1.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

CCSS.ELA-Literacy.W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).

CCSS.ELA-Literacy.W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Speaking and Listening

CCSS.ELA-Literacy.SL.1.1 Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

CCSS.ELA-Literacy.SL.1.1a Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).

CCSS.ELA-Literacy.SL.1.1b Build on others’ talk in conversations by responding to the comments of others through multiple exchanges.

CCSS.ELA-Literacy.SL.1.1c Ask questions to clear up any confusion about the topics and texts under discussion.

CCSS.ELA-Literacy.SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

CCSS.ELA-Literacy.SL.1.3 Ask and answer questions about what a speaker says in order to gather additional information or clarify something

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that is not understood.

CCSS.ELA-Literacy.SL.1.4 Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

CCSS.ELA-Literacy.SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

CCSS.ELA-Literacy.SL.1.6 Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 [here](#) for specific expectations.)

Science Process Standards

Standards for Mathematical Practice

Science Process Standards**The Nature of Science**

- X Use a scientific notebook to record predictions, questions and observations about data with pictures, numbers or in words.
- X Conduct investigations that may happen over time as a class, in small groups, or independently.
- X Generate questions and make observations about natural processes.
- X Make predictions based on observations.
- X Discuss observations with peers and be able to support your conclusion with evidence.
- Make and use simple equipment and tools to gather data and extend the senses.
- Recognize a fair test.

The Design Process

- X Identify a need or problem to be solved.
- X Document the design throughout the entire design process.
- X Brainstorm potential solutions.
- Select a solution to the need or problem.
- Select the materials to develop a solution.
- Create the solution.
- Evaluate and test how well the solution meets the goal.
- Communicate the solution with drawings or prototypes.
- Communicate how to improve the solution.

Mathematical Practices

- X MP.1. Make sense of problems and persevere in solving them.
- X MP.2. Reason abstractly and quantitatively.
- X MP.3. Construct viable arguments and critique the reasoning of others.
- X MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- X MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Plan of Work

Common Misconceptions

What misconceptions might students have with these ideas?

Students do not have the proper definition of matter.

Air is not gas.

All liquid is the same.

You cannot change the state of matter. Once a solid it stays a solid.

Suggested Activities

- Students take pictures of different types of matter and attempt to separate them into the correct three different states prior to any teaching of matter. Follow-up after the unit and take the same pictures and have students then re-sort the pictures to demonstrate knowledge of the different states of matter.
- Whole group teacher does an experiment to show how a gas can blow up a balloon.

Suggested Vocabulary

Solid, liquid, gas, properties, matter, condensation, evaporation, senses, recycled, reuse

Resources

- http://www.ehow.com/how_2108044_blow-up-balloon-baking-soda.html
- http://firstgradefanatics.blogspot.com/2011/12/were-all-about-matter-around-here_10.html
- <http://adayinbcasfirstgrade.blogspot.com/2013/02/states-of-matter.htm>
- <http://mrstfirstgrade-class-jill.blogspot.com/2011/12/states-of-matter.html>
- <http://onceuponafirstgradeadventure.blogspot.com/2012/04/chocolate-lovers-lesson-on-matter-with.html>
- <http://www.cstone.net/~bcp/1/1NSci.htm>
- http://www.aquariumofpacific.org/downloads/ed_1sslceCream.pdf

Assessment

Type of Assessment

Example

<input checked="" type="checkbox"/> Observation	Pre and post picture assessment of pictures into the three different states of matter.
<input checked="" type="checkbox"/> Oral Questioning	Discuss what methods are appropriate to melt an ice cube the fastest based on experiment done.
<input checked="" type="checkbox"/> Exit Slip	Give an example of solid, liquid, or a gas before going to lunch.
<input checked="" type="checkbox"/> Journal	Write in journal about what happened in order to turn a liquid into a solid and then back to a liquid.
<input checked="" type="checkbox"/> Graphic Organizers	Students write different properties of each state on graphic organizer from their reading.
<input type="checkbox"/> Self-Assessment	
<input type="checkbox"/> Writing Prompt	
<input type="checkbox"/> Presentation	
<input type="checkbox"/> Electronic media	
<input type="checkbox"/> Think Pair Share	

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<input type="checkbox"/> Whiteboards	
<input checked="" type="checkbox"/> Experiment/projects	Students do "Race to Water," which students will take an ice cube and attempt to melt it as fast as they can.
<input type="checkbox"/> Quiz	
<input type="checkbox"/>	
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