

Unit 3: Connecting Places, Connecting People

WEEK 6 Lesson 1

Science and Engineering: Physical Science
Matter and Its Interactions: Properties of Materials
Are all changes in matter reversible?

S & E Big Idea	Dividing a material into smaller pieces does not change the material.															
S & E Guiding Questions	What happens to the properties of materials when we cut the materials into smaller pieces? Has the material/matter changed, or is it still the same?															
Content Objective	I can compare the properties of a piece of material before and after it is cut into smaller pieces. (2-PS1-3, Practice 4)															
Language Objective	I can draw on previous experience to describe properties of materials. (L.6.2.a)															
Vocabulary	reversible: able to be returned to its previous state															
Materials and Preparation	<ul style="list-style-type: none">• Science and Engineering packets• writing and drawing tools, including colored pencils• chart paper, 2 pieces, and markers <p>Title one piece of chart paper, Some Properties of Materials. On the other piece, prepare the following chart, with as many lines as the class has small groups.</p> <table border="1"><thead><tr><th>Material</th><th>Properties: large piece</th><th>Properties: small piece</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table>	Material	Properties: large piece	Properties: small piece												
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	<p>On the whiteboard, write the following questions.</p> <p>Does a material remain the same in large or small pieces? What makes you say that? What has changed? What remains the same?</p> <ul style="list-style-type: none"> ● large pieces of materials that can be torn, broken, or cut into smaller pieces, enough variety for each group to work with a different material For example: <ul style="list-style-type: none"> ○ construction paper ○ cloth ○ wood (paired with sandpaper, rather than with scissors) ○ thin plastic ○ aluminum foil ○ leaves ● appropriate tools for making these materials smaller (Children will also use their hands.) For example: <ul style="list-style-type: none"> ○ scissors ○ sandpaper ○ dull plastic knives ○ hole punches <p>Affirm or reassign small groups, based on how children have been working together in previous investigations.</p> <p>Note: The size and shape of a material are properties of that material. What children will discover is that the material, altered in size and shape (these properties), is still the same material, as it has not undergone a chemical change.</p>
<p>Opening 4 minutes</p>	<p><i>We have been investigating how matter can undergo changes. Some of these changes are reversible, and some are not. For example, we can turn water into ice and back into water again, but we cannot turn tomato sauce back into its separate, raw parts of tomatoes, garlic, and oil.</i></p> <p><i>Today we'll investigate another change in matter: What happens to a material when we break or cut it into smaller pieces? Is it still the same material? We began to wonder about this before; today we'll do our own investigations. First, let's remember back to when we investigated properties of materials for our chair</i></p>

	<p style="text-align: center;"><i>designs in Unit 1. What properties did we identify then?</i></p> <p>Brainstorm a list of general properties that materials might have, and record this list on the paper titled, Some Properties of Materials. Make this list accessible for children to reference as they work in groups.</p> <p style="text-align: center;"><i>Today you will work in groups, with each group using a different material. I'll lead you through this investigation.</i></p>
<p>Investigation 15 minutes</p>	<p>Indicate the appropriate page in the Science and Engineering packet, and distribute children's packets. Send children to work in groups, distributing one material to each group. Give instructions to the whole class at once, with time between instructions for children to carry out and discuss each step of the investigation.</p> <ol style="list-style-type: none"> 1. <i>Look at and pass around your material. Write the kind of material you have at the top of the page, next to "Material."</i> 2. <i>Talk in your group to describe the material's properties. Record these properties in the left column, under "properties of a large piece."</i> <p>Distribute tools to each group, considering those that will work for a given material.</p> <ol style="list-style-type: none"> 3. <i>Use tools to change the material by making it into smaller pieces. [tearing, breaking, crumbling, cutting, sanding, etc.]</i> 4. <i>Look at the small pieces. Describe the properties of the small pieces. Record these properties in the right column, under "properties of a small piece."</i> 5. <i>Compare the properties of the original large piece and the small pieces. Using a colored pencil, circle all the properties that are the same on both sides of the chart.</i> <p>Refer to the questions on the board.</p> <ol style="list-style-type: none"> 6. <i>Discuss these questions:</i> <ul style="list-style-type: none"> <i>Does a material remain the same in large or small pieces?</i> <i>What makes you say that?</i> <i>What has changed?</i> <i>What remains the same?</i>
<p>Close of investigation 5 minutes</p>	<p>While children clean up, invite one child from each group to record some of the group's observations on the class chart.</p>

<p>Discussion 5 minutes</p>	<p>Facilitate a discussion based on children’s observations and questions. <i>By looking at everybody’s results, what can we say about the properties of a material when we cut it in smaller pieces?</i></p>
<p>Closing 1 minute</p>	<p><i>Today we talked about how materials keep their properties even when they are cut in smaller pieces.</i></p>
<p>Standards and Practices</p>	<p>L.6.2.a Use words and phrases acquired through conversations, reading, and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy, that makes me happy). 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>
<p>Ongoing assessment</p>	<p>Reflect on class discussions. How do children refer to previous experiences in talking about materials and their properties? What language do they use? Are children identifying appropriate properties of matter?</p>

Notes