

Science

Quarter 1 - Module 4A: Changes in Solid Materials when Bent or Pressed



Department of Education • Republic of the Philippines

Science – Grade 4

Alternative Delivery Mode

Quarter 1 - Module 4A: Changes in Solid Materials when Bent or Pressed

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Schools Division Superintendent: Rebonfamil R. Baguio

Development Team of the Module

Author: Maria Victoria C. Alvarez

Editor: Janette V. Bejona

Reviewers: Jimbo Russell C. Agbayani, EPS – Science
Maritel L. Agbayani, PSDS
Desiree Rose L. Allaba
Fabrienne Isa M. Cabanao

Illustrator: Dandy C. Batusin

Layout Artists: John Rimmon I. Taquiso

Management Team:

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Department of Education - Division of Valencia City

Office Address: Lapu-lapu Street, Poblacion, Valencia City 8709

Telefax: (088) 828-4615

Website: deped-valencia.org

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Science

Quarter 1 - Module 4A: Changes in Solid Materials when Bent or Pressed

This instructional material was collaboratively developed and reviewed by educators from public schools. We encourage teachers and other education stakeholders to email their feedback, comments, and recommendations to the Department of education at region10@deped.gov.ph.

We value your feedback and recommendations.

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What This Module is About

This module is all about Changes in solid materials.

Solid materials can be changed: bent, pressed, hammered, or cut. Solid materials when bent, pressed, hammered or cut undergo physical change. No new substance is formed. But, a change in form, size and shape is evident.

In this lesson, you will know how changes in solid materials occur, and what are the changes that materials undergo.



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What I Need to Know

Several solid materials are bent or pressed in order to change them into something useful which humans use in their day to day activities. Though the shape, size and texture changed, no new material is formed.

At the end of the lesson, you are expected to:

- identify the characteristics of solids.
- describe what happens to solid materials when bent.
- describe what happens to the solid materials when they are pressed.

Time duration: 4 days

How to Learn from this Module

To achieve the objectives cited above, you are to do the following:

- Take your time reading the lessons carefully.
- Follow the directions and/or instructions in the activities and exercises diligently.
- Answer all the given tests and exercises.

Icons of this Module

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	<p>What I Need to Know</p>	<p>This part contains learning objectives that are set for you to learn as you go along the module.</p>
	<p>What I Know</p>	<p>This is an assessment as to your level of knowledge to the subject matter at hand, meant specifically to gauge prior related knowledge</p>

	What's In	This part connects previous lesson with that of the current one.
	What's New	An introduction of the new lesson through various activities, before it will be presented to you
	What is It	These are discussions of the activities as a way to deepen your discovery and understanding of the concept.
	What's More	These are follow-up activities that are intended for you to practice further in order to master the competencies.
	What I Have Learned	Activities designed to process what you have learned from the lesson
	What I Can Do	These are tasks designed to showcase your skills and knowledge gained, and applied into real-life concerns and situations.
	Post Assessment	This assessment evaluates your level of mastery in achieving the learning objectives
	More Activities	Activities designed to increase the strength of your skills and knowledge gained and tends to induce repetitions of actions / learning



What I Know

Test A

Directions: Write **T** if the statement is true, Write **F** if the statement is wrong. Write your answer on the blank.

- _____ 1. Not all solid materials can be bent.
- _____ 2. Solid materials may change their texture and size when bent.
- _____ 3. Bending of solids materials may change their shape and size.
- _____ 4. New material is formed when a solid material is bent.
- _____ 5. Only the physical appearance changed when solids are bent.

Test B

Directions: Select the best answer from the choices given. Write the letter only.

1. What characteristic of solid materials will change when you bend a plastic ruler?
A. shape B. size C. color D. texture

2. The shape of a paper cup may change through_____
A. coloring B. melting C. pressing D. bending

3. What happens to a modelling clay when pressed?
A. crack B. harden C. melt D. flatten

4. Pressing solid materials will change their_____
A. size and color

- B. shape and color
- C. size and shape
- D. Color and texture

5. What happens when you bend a solid material?

- A. physical appearance stays the same
- B. physical appearance changes
- C. materials will disappear
- D. new material is formed

Lesson 1

Describe Changes in Solid Materials When They are Bent

Solid materials have definite shape and volume. They have different characteristics/ properties such as size, shape, color, texture, weight, etc.

Solid materials can be changed through many ways: cutting, tearing, folding, twisting, bending, stretching, pressing, coloring, crumpling, melting, and others.

No new substance is formed but, a change in form, size and shape is evident.

In this lesson, you will know how changes in solid materials occur and what changes such materials undergo when bent or pressed.

Week 5

Day 1



What's In

Quick Check!

How are you going to change the materials based on its physical structure? Write the letter of your answer in column 2. Do this in your activity notebook/answer sheet.

Directions: Write A. cutting; B. bending

Materials	What can I do to change the size and shape of these materials
1. drinking straw	
2. garter	
3. plastic cup	
4. rubber slipper	
5. towel	

Read and answer the following questions. Write the answer in your activity notebook/answer sheet.

1. Describe the changes that took place to the given materials.
2. How can we change the shape of solid materials?
3. Was there a new material formed?



What's New

Let's Bend It!



Look at the picture above, have you tried bending your body? What have you observed after bending? Describe how you did it.

In this lesson, you will know what changes take place when solid materials are bent. You are going to perform this activity with these materials provided:

Materials:

- 2 pcs. of soft plastic ruler
- electric wire (12 inches long)
- 1 piece paper clip
- 1 piece metal spoon (used for eating)
- 1 pair of rubber slippers

Directions:

3

Materials	What change happened to the material when bent?
1. banana que stick	
2. electric wire	
3. paper clip	
4. popsicle stick	
5. rubber slippers	

1. Bend each of the given solid materials. Observe and describe what happens to each material.
2. Record your observations in your activity notebook/answer sheet.

Directions: Based from your activity, answer the following questions.

Write your answer in your activity notebook/answer sheet.

1. After they were bent, the solid materials changed their _____.
A. shape and size. B. color C. odor D. texture

2. Which of the following is TRUE when the solid material was bent?
A. New material was formed. B. New texture was formed.
C. No new material was formed. D. All of the above.

3. The common characteristic of solid materials that changed when they were bent during the activity was _____.
A. physical appearance. B. texture.
C. color D. none

4. When bent, some solid materials change these properties.
A. size and color B. size and shape
C. size and texture D. all of the above

5. In constructing a house, bending of solid materials is applied in situation like _____.
A. bending of cement
B. bending of steel/iron bar
C. bending of wood
D. all of the above



What is It

Learning Circuit!

Solid materials can be bent. When bent, these materials may change their size and shape. No new material is formed. Only the physical appearance of the materials is changed.

Bending of solid materials is applied in situations like: bending of steel bars/iron in industry, bending of paper clips, etc.

Week 5

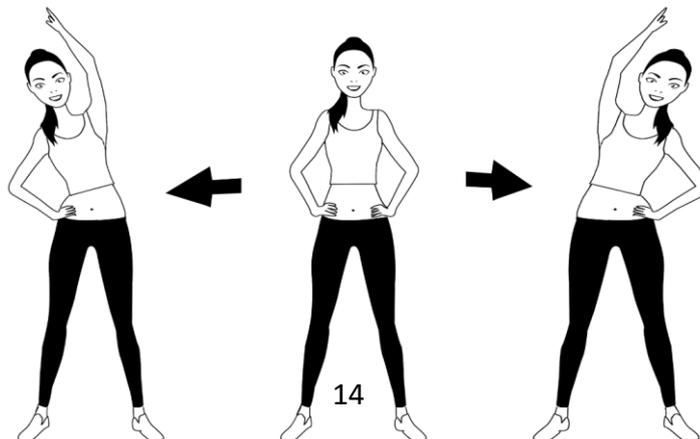
Day 2



What's More

Let's do some Exercise.

Directions: Do it yourself. Stand straight and raise your right hand. Bend your body to the left. Stand straight again. This time, raise your left hand and bend your body to the right. Then, go back to your position/seat.



Questions:

1. When you bend your body, was there a change that took place?
2. How do you describe the physical change that happened to your body?
3. What might happen if you bend your body too much?
4. What took place when you bend your right arm?



What I Have Learned

Just Fill it Up!

Directions: Fill in the blanks with the correct answers. Select the answers from the box provided for you. Write the letter of

the correct answer in your activity notebook / answer sheet.

- | | |
|-----------|------------------------|
| A. bent | F. changed |
| B. size | G. physical appearance |
| C. shape | H. pressed |
| D. formed | I. bent and pressed |

Solid materials can be _____(1). When bent, these materials may change their _____(2) and _____(3). No _____(4) is formed. Only the _____(5) of the materials is changed.



What I Can Do

Experiment Time!

Directions: Describe the following materials when bent. What changes happened? Write the letter of the correct answer in your activity notebook/answer sheet.

Materials	Changes that Happened		
	a. size	b. shape	c. color
1. hair pin			
2. crayon			
3. cellphone wire charger			
4. plastic spoon			
5. plastic ruler			

Read the questions below. Write the answer in your activity notebook/answer sheet.

1. Describe what happened when solid materials were bent.
2. What changes took place with the materials?
3. Which type of the materials above are likely to break when they are bent too much?
4. Which materials will not break even when it is bent too much?
5. Which materials return to its original shape after bending?



Answer Key

What I know	TEST A	1. T	2. F	3. T	4. F	5. T	TEST B.	1. A	2. C	3. D	4. C	5. B
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What's More	1. Yes	2. Body bent to left or to right	3. It will be painful	4. The shape was changed
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What I have Learned	1. A	2. B, C	3. B, C	4. E	5. G
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3. A, B	4. A, B
---------	---------

- 5. hairpin, plastic ruler, cellphone wire
- 4. hairpin, cellphone wire
- 3. plastic spoon, plastic ruler

What Can I Do?			
	size	shape	color
1. hairpin	/	/	
2. crayon	/	/	
3. cellphone wire charger		/	
4. plastic spoon		/	
5. plastic ruler		/	
Questions			
1. Changed in size, shape or both			
2. Physical change			

What's New?	
1. shape, size	Questions
2. shape	1. A
3. shape	2. C
4. shape, size	3. A
5. shape	4. B
	5. B

Lesson 2	Describe Changes in Solid Materials When Pressed
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Solid materials have definite shape and volume. They possess different characteristics/ properties such as size, shape, color, texture, weight, etc.

Solids can be changed through many ways: cutting, tearing, folding, twisting, bending, stretching, pressing, coloring, crumpling, melting, and others.

No new substance is formed. But a change in form, size and shape is evident.

In this lesson, you will know how changes in solid materials occur and what are the changes such materials when they undergo pressing.

Week 5

Day 3



What's In

Quick Check!



bending an iron

Read each questions below and write the answer in your activity notebook/answer sheet.

1. What happened to the iron rod when bent?
2. What possible changes took place in the iron after bending?
3. Was there a new material formed after bending the iron?



What's New

Let's Press It!

You are going to perform this activity with these materials:

Materials:

- 2 pcs of avocado fruit
- 2 pcs of banana
- 3 pieces of chocolate bar
- 3 pieces of chalk

stone, piece of wood

Direction:

- Press the materials one at a time using a piece of wood or stone.
 - Observe the changes that took place to each material after pressing.
 - Record your observation by describing it in your activity notebook/answer sheet.
-
- Fill in your observation in the table below by making a check mark (/) on the appropriate columns on what changes took place in the material after pressing them using the codes below: Write the answer in your activity notebook/answer sheet

A- size

B- shape

C. texture,

D- No change.

Materials	Changes			
	A	B	C	D
avocado				
book				
chocolate				
salt				

wood				
------	--	--	--	--

Questions:

1. What happened to solid materials when they are pressed?
2. Was there a new material formed when solid materials were pressed?
3. Which of the materials above changed their shape when pressed? Explain your answer.
4. Which of the solid materials used in the activity showed a change in physical appearance? Explain your answer.
5. Which of the solid materials used in the activity showed a change in texture? How?
6. When a solid material is pressed, does its texture also change? Support your answer.



What is It

Learning Circuit

Solid Materials can be pressed. When pressed, these materials may change their size and shape.

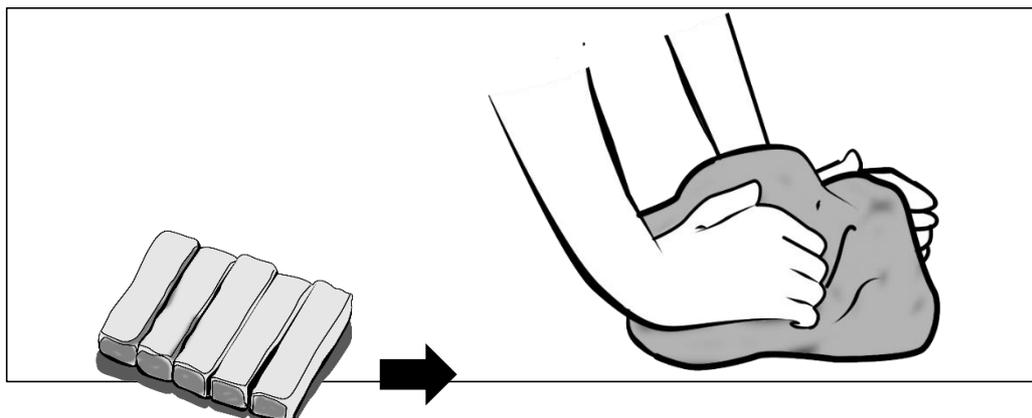
Other solid materials may also change their textures when pressed. However, no new material is formed because only the physical appearance of the material is changed.



What's More

Can you press it?

Directions: Describe what changes taking place in the material as shown in the drawing. Read the questions below then write the answers in your activity notebook/answer sheet.



1. Describe what happened to the clay when pressed.
2. Is there a new material formed? Yes or No? Explain your answer.
3. In what way did the size of the clay change?
4. Fill the blanks with the correct word or group of words to complete the sentence: Write the answer in your activity notebook/answer sheet.
5. When the clay was pressed, it changed its _____
6. Pressing solid materials will not form _____ materials.
7. When the pressed clay is divided into two (2) it changes its _____.



What I have learned

Complete me.

I learned that _____

I realized that _____



What I Can Do

Let's do it!

Directions: Give what characteristics of solid materials changed after they are pressed. Write your observations in your activity notebook/answer sheet.



Materials	Changes
1. chewing gum	
2. empty plastic bottle	
3. bread	
4. notebook	
5. ice	

Post Assessment

Test A

Directions: Write **T** if the statement is true, Write **F** if the statement is wrong. Write your answer in your activity notebook/answer sheet.

- _____ 1. Solid materials can be bent.
_____ 2. Solid materials may change their texture and size when bent.

- _____3. No new material is formed when a solid material is bent.
- _____4. Only the physical appearance is changed when solids are bent.
- _____5. Bending of solids reduce the strength of the material.

Test B

Directions: Read each item carefully. Select the best answer from the choices given. Write the letter of the correct answer in your activity notebook.

1. What characteristic of a solid material like metal spoon and fork changed if they are bent?
A. shape B. color C. texture D. odor
2. Which group of solid materials flattened when pressed?
A. bread, dough ,bubble gum B. book, notebook, pen
C. scissor, metal fork, puncher D. nail, needle, pin
3. What happens to a ripe banana when pressed?
A. New material is formed.
B. The weight and texture will change.
C. The physical appearance stays the same.
D. The physical appearance will change.
4. Solid materials like wire, hair pin and metal spoon change Their shapes through_____.
A. tearing B. bending C. cooling D. pressing
5. Which statement is TRUE when solid materials are pressed?

- A. Color is changed.
- C. New material is formed.

- B. No new texture is formed.
- D. No new material is formed



Additional Activities

- A.** List down at least 3 solid materials you can find at home that can be bent. Bend the materials and describe the changes that happened.

Write your answer in your activity notebook/answer sheet.

Name of materials	Changes Observed
1.	
2.	
3.	

- B.** List down at least 3 solid materials you can find at home that can be pressed. Press the materials and describe the changes that happened. Write your answer in your activity notebook/answer sheet.

Name of materials	Changes Observed
1.	
2.	
3.	

Congratulations for working diligently with this module. Share your experience with your teacher or elder brother or sister at home.



Answer Key

What's in
1. Changed it's shape
2. Changed in length, shape
3. No

What I have learned?
1. Pressing solid materials changes the size, shape and texture. No physical change happened and no new material is formed.
2. Pressing solid materials is also useful, have uses.

Post Assessment
Test A.
1.T
2.F
3.T
4.T
5.F
Test B
1. A

- 2. A
- 3. D
- 4. D
- 5. D

What Can I Do	
Materials	Change after Pressing
Bubble gum	Fattened/changed shape
Empty plastic bottle	Fattened/changed in shape
bread	Fattened/changed in shape
notebook	No change

ice
Broken into small pieces

What's More?
1. change in size and shape
2. No, because it was already pressed.
3. pressing
4. size and shape
5. new
6. size



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For inquiries and feedback, please write or call:

Department of Education – Division of Valencia City

Lapu - Lapu Street, Poblacion, Valencia City 8709

