



Lesson 2: HOW BIG



Students practice spatial thinking and vocabulary as they reconsider the figure from lesson 1, now exploring a third dimension and using Brackitz unit planks to measure height, width, and depth.

Objectives:

Students explore 2D vs. 3D objects to better understand size and dimensions. "I can" statements that students should be able to do after completing this lesson include: "I can identify height, length, and width." "I can compare size by thinking about everyday objects."

Vocabulary used in this activity:

dimension, measurement, length, height, width, 2D (2 dimensions), 3D (3 dimensions)

Standards

NY State Pre-K Foundation for Common Core Social Development - Compares and/or contrasts self to others, Exhibits self confidence by attempting new tasks independent of prompting or reinforcement, Displays accomplishment, contentment, and acknowledgement when completing a task or solving a problem by himself/herself

NY State Pre-K
Foundation for
Common CoreMath - Describe and compare measurable attributes, Analyze, compare, and sort objects,
Identify measurable attributes of objects, such as length, and weight. Describe them using
correct vocabulary, Create and build shapes from components

NY State Pre-K
Foundation for
Common CoreCommunication, Literact - Describe and compare measurable attributes, Analyze,
compare, and sort objects, Identify measurable attributes of objects, such as length, and weight.
Describe them using correct vocabulary, Create and build shapes from components

ECERS-R Language-Reasoning: Books and pictures, Encouraging children to communicate Using language to develop reasoning skills Activities: Fine Motor, Art, Math/Numbers | Program Structure: Group time

Materials and Supplies: Time needed: 35-40 minutes

Figure cutouts from lesson 1, 3-D figure(s) with some depth made out of dough or cardboard, paper, pencils/crayons, Brackitz planks and 4-way connectors, box . Optional: cookie or play-dough to make more tactile figures, tracing paper.

Setup and preparation:

Have trays that have a character cutout for each kid or group, with the same number of planks and connectors for each group of 2-3; help students cooperatively form groups of 2-3 to work together.

Background knowledge:

Students who worked with the 2D cutouts will better understand size and be able to expand their comprehension to the third-dimension.



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35-40 minutes

Whole Class

10 minutes

Holding the cutout figure from lesson 1 remind students, "Remember our Gingerbread character? small friend? S/he's pretty small, especially compared to us. Who remembers how to describe this Gingerbread's size? What words help us describe size? What objects help us understand the Gingerbread's size? "

Engage class in remembering what we learned about this figure's size as a review of the previous lesson.

Instructor Notes and Tips

When engaging students in discussing and describing size remind them of:

- Comparing to common objects bigger than _____, smaller than _____
- Reference the Gingerbread character's size in height and width
- Using Brackitz pieces to describe and measure height and width

Specifically use the words height, width, and two-dimensions (2D) as you discuss this with the whole group.

11 10 9 8 7

"When we draw on paper, we drawTALL and WIDE - this shows us 2 DIMENSIONS. Drawings are called 2 dimensional or 2D - it's how we see things in pictures and on TV. There's a third measurement in real life. Look at this box. When I hold this plank next to it, it's 1 plank wide, and 1 plank tall but what other way do we need to measure? (How long/deep!) It's only___ deep. I can use one of these 4-way connectors to make something that has a similar 3 dimensional size to this box. "

Group Exploration 5-10 minutes

"What else in our classroom has 3-dimensions?" (Everything! Desk, books, cubbies, etc.) "In your groups, use Brackitz planks to measure three things with 3 dimensions!" In discussion, use actual Brackitz planks to hold up alongside your box.

If students are struggling to measure things that have irregular shapes, suggest things that have more rectilinear shape like: Books, book cases, cubbies, storage bins, tables.

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Group Challenge

15 minutes

(Holding 3D Gingerbread model) "Here is a 3D look at our friend. I have this 3D figure that shows height, width AND the third dimension of depth! But it's fragile. Can we build homes for her/him to live safely in using your Brackitz pieces? In your groups, use these planks to build a safe space for our friend. Make it small enough for it to be cozy but big enough to move in and out of easily." This is a chance for students to begin building with Brackitz. Watch to make sure groups are able to share ideas and Brackitz pieces functionally. It can help to do a hands-on demonstration with groups on using the connector pieces. You can try monitoring sharing in the group, or have a timer to help systematize sharing.

Group Reflection

5 minutes

(Teacher brings whole class back together and aggregates from small group builds.) "Do all of your special homes fit? What happens if we make it too small?"

And, "We need to be sure we all know how big our creature is, in all three dimensions! Let's record it on the board. (trace Brackitz pieces for each of the 3 dimensions) Make sure that before you conclude there is some understanding and review of how BIG the creature is in all three dimensions.

Record somewhere that you and students can reference for future class building challenges how TALL (Hold up plank, and indicate using holes until class agrees. Repeat this question and group answer/consensus building for WIDTH and DEPTH.)

Using planks as a unit of measurement will help students continually refer to these dimensions

CHALLENGE ADVANCED STUDENTS

In discussion, ask students to consider other prepositions as they consider the character's size. "What else can s/he fit UNDER?" "Could someone this size goTHROUGH anything that we couldn't?"

In the challenge, challenge students to think of why we don't make containers and homes much bigger than we need them. Why make things fit the size of the item/person/animal?

SIMPLIFY FOR YOUNGER GROUPS

In discussion, show students the difference between the picture **of a book**, and a real, 3D book and so on.

In the group exploration, set up stations and have groups rotate to them. Have students measure a table, a book, a storage bin, etc. This allows you to set up more regular shaped Ye



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Student Worksheet



