

APPROVED

By H2M-Mac003 at 2:01 pm, Feb 22, 2018

Home Connection

Name _____

Dear Family,

Today we did an activity called “Weight & Stability” from a STEM project called *Gus and Nia’s Shaking Adventure*. STEM stands for **S**cience, **T**echnology, **E**ngineering, and **M**ath. This activity—the first of four—introduced children to this engineering concept:

- The distribution of weight affects a structure’s stability.

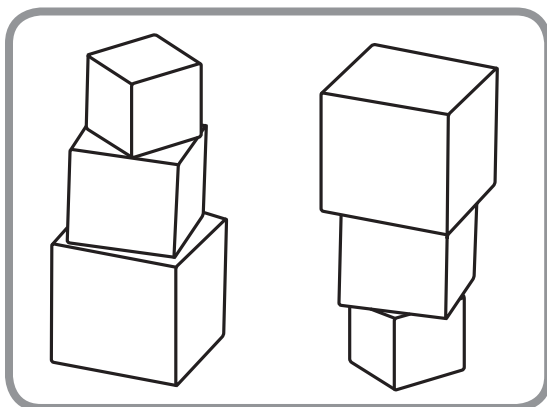
Let your child tell you about the activity. Encourage your child to use the pictures on the back of this letter to help explain what we did. As your child speaks, listen for words that describe such as **stable**, **weight**, **heavier**, and **lighter**, and position words, such as **top**, **middle**, and **bottom**.

If your child needs help in describing the activity, use prompts such as *What did you use to make towers? How was one of the blocks different? How did you test the towers to see if they were stable? Where was the best place to put the heavy block?*

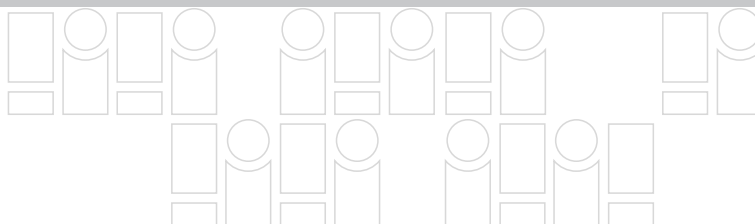
Try This at Home: Size and Position

Gather plastic or wooden blocks of different sizes and put them on a flat, movable base, such as a tray or baking sheet. Have your child use the blocks to build towers. In some towers, put the large block on top; in others, put it on the bottom.

Have your child test the stability of each tower by gently shaking the base. Ask your child: *Which tower was most stable? Where was the best place to put the large block? Where should you put the small block?*



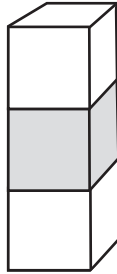
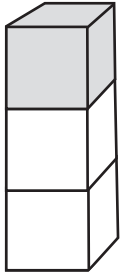
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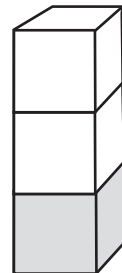
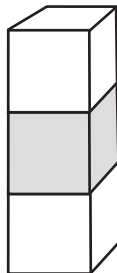
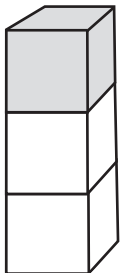
Where Should the Heavy Block Go?

We built towers of three blocks. We tested where to put the heavy block to make the tower stable.

My Test: Which is most stable?



Shake Table Test: Which is most stable?



Activity 2

Home Connection

Name _____

Dear Family,

Today we did an activity called “Squares & Triangles” from *Gus and Nia’s Shaking Adventure*. This activity introduced children to these mathematics and engineering concepts:

- A square can be divided into triangles.
- A triangle is stronger than a square.

Let your child tell you what happened. Encourage your child to use the information on the back of this letter to help explain how we compared the strength of different squares. As your child speaks, listen for the words **cross brace** and **x-brace**. Also listen for words that describe shapes, such as **square** and **triangle**.

If your child needs help in telling you about the activity, use prompts such as *What materials did you use to make a square? How did you test the strength of the square? How did you make your square stronger? What is a cross brace? What is an x-brace? How did the braces change your square?*

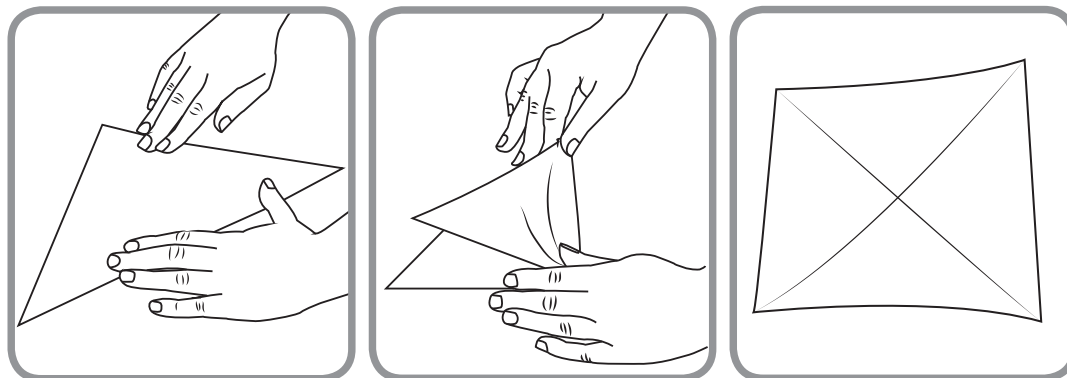
Try This at Home: Investigating Squares and Triangles

Collect two pieces of paper and trim them so that each is square.

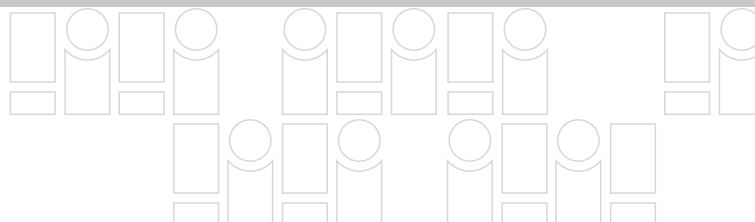
Have your child identify the shape of the first piece of paper. Ask questions to help your child describe a square, such as *How many sides does a square have? Are all of the sides the same length? How many corners does a square have?*

Challenge your child to fold the paper so it forms two triangles of equal size. Then have your child describe the number of sides and corners in a triangle.

Fold the second piece of paper into 4 equal triangles and cut them apart. Challenge your child to use the 4 triangles to make a square.



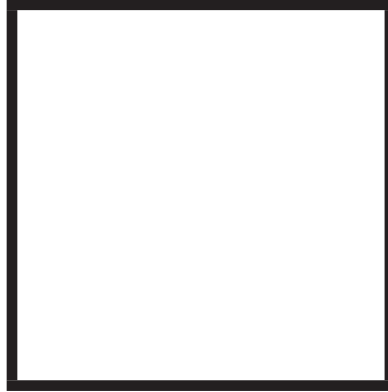
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Which Square Is Strongest?

We used rods and connectors to test how a cross brace and an x-brace change the strength of a square.

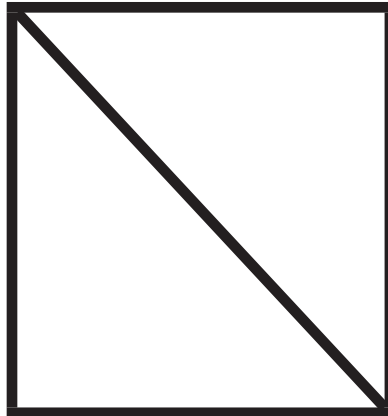
Square



How many Δ ?

0 1 2 3 4

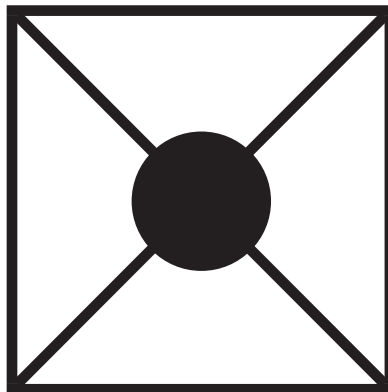
Square with
cross brace



How many Δ ?

0 1 2 3 4

Square with
x-brace



How many Δ ?

0 1 2 3 4

Circle the strongest square.

Activity 3

Home Connection

Name _____

Dear Family,

Today we did an activity called “Test a Frame” from *Gus and Nia’s Shaking Adventure*. This activity introduced children to these science and engineering concepts:

- In a structure, some shapes can hold up more weight than others.
- Braces can strengthen a structure.

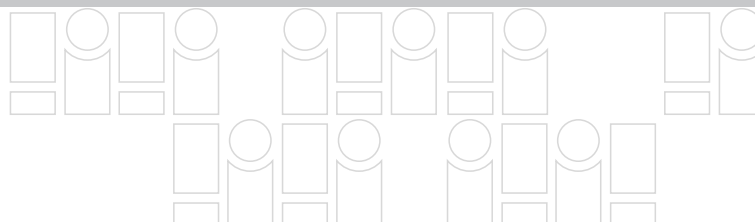
Let your child tell you what happened in the activity. Have your child use the diagrams on the back of this letter to explain what we did. As your child speaks, listen for the words **weight** and **frame**. Also listen for position words, such as **opposite**.

If your child needs help in telling you about the activity, ask questions such as *What did you put on the frame? How did the weight of the beanbags change the frame? How did a cross brace affect the strength of the frame? How did an x-brace affect the strength of the frame? Which frame held the most beanbags?*

Try This at Home: How Weight Changes Furniture

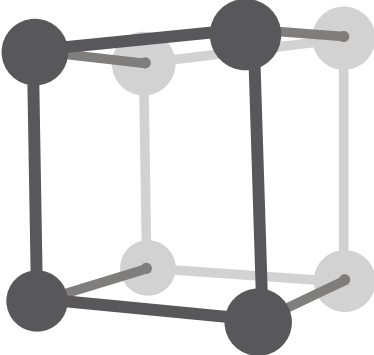
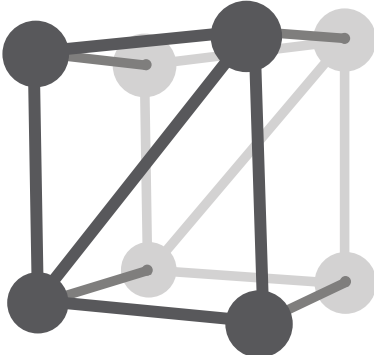
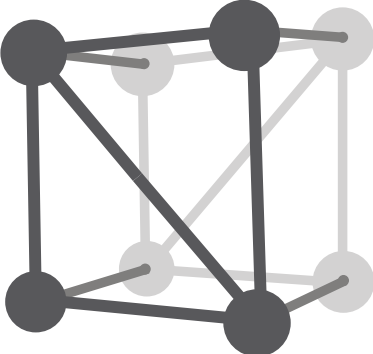
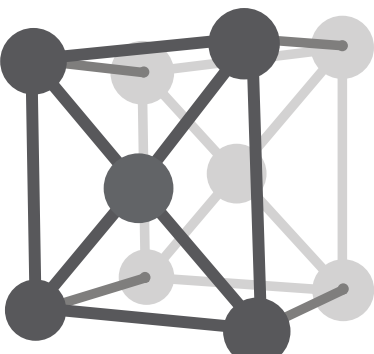
Take a tour of your home to find pieces of furniture that typically hold heavy objects. Ask your child to find evidence that the weight of objects pressing down has changed the shape of the furniture. For example, your child might observe shelves or bookcases that curve down in the middle or upholstered chairs with permanent “seat” indentations. Ask your child to identify the heavy object that caused the furniture to change shape. Look at the legs of the furniture to identify what shapes are used to support the heavy objects.

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How Many Beanbags?

We added beanbags to find which frame was strongest.

	
How many? <div><div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div></div>	How many? <div><div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div></div>
	
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Circle the strongest frame.

Activity 4

Home Connection

Name _____

Dear Family,

Today we did an activity called “Clubhouse Shake” from *Gus and Nia’s Shaking Adventure*. This activity introduced children to these engineering concepts:

- Braces can strengthen a structure.
- The distribution of weight affects a structure’s stability.

Let your child tell you what happened in the activity. Have your child use the information on the back of this letter to explain what we did.

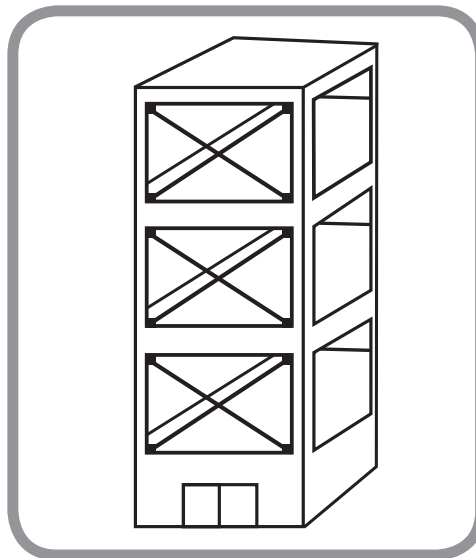
Listen for words that tell about position, such as **bottom**, **top**, **middle**, and **opposite**.

If your child needs help in telling you about the activity, ask questions such as *How did you test the frame? How did you make the frame stronger? Where was the best place to put the most weight?*

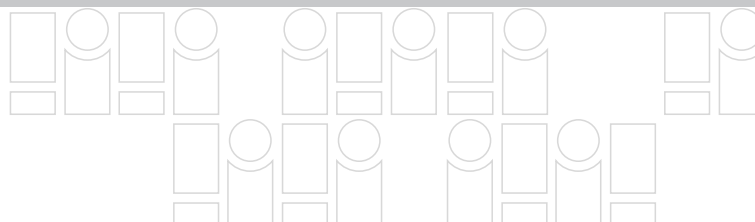
Try This at Home: The Framework of Buildings

If there is new construction in your neighborhood, visit it with your child. Talk about the material that is being used to build the frame and how many levels the new building will have. Ask your child to identify shapes in the frame, such as squares and triangles. Look for examples of cross braces or x-braces.

With your child, examine this picture of the frame of a building. Ask questions such as *What shapes can you see in the frame? Does this building have cross braces? How many floors will the building have? Where is the best place to put the heavy parts of this building?*






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Test the Clubhouse

We tested how to brace the frame to make it stronger and how to distribute the weight of the beanbags.

Show the braces on each floor.

Top	
Middle	
Bottom	

How many beanbags on each floor?

Top						
Middle						
Bottom	