

Strongest Shape

What kind of roof should we build for our house?

ENGAGE

Discuss sturdiness with students and why certain structures are sturdier than others. Show them pictures of different roof styles and how they are shaped. Ask them what kind of roof their house has. Explain to students that they will be building a roof based on a shape of their choice. They must determine which shape is the best for the roof. Have student pairs discuss their plan of action. Allow them 10 minutes for building and sketching.

EXPLORE

Students will be challenged to design and build a sturdy roof for a LEGO house. Students must select one shape (i.e., triangle, square, rectangle, rhombus) to build and test for their first iteration.

EXPLAIN

Students should test their roof. Attach the roof to the house and push down on the roof to see if it stays together. If the roof fails, have them modify their design and try again.

ELABORATE

Discuss the sturdiness of each roof shape. Discuss any problems that students encountered and how they went about fixing them.

EXTEND

Challenge students to change the design of their roof shape to see what happens when they adjust the size and thickness of the shape. Encourage students to utilize multiple trials to ensure reliability of their designs.

NOTE: Students should only try one design change at a time.

Size of the Shape	Thickness of the Shape
Write down details of how you are changing the size of the shape (i.e., how are you measuring the size of the shape?). Include the sizes you are comparing... write down the results.	Write down details of how you are changing the thickness of the shape (i.e., how are you measuring the thickness of the shape?). Include the thickness measurements you are comparing... write down the results.

