

Marshmallow Towers

Activity Overview

Description

Campers develop an understanding of the different shapes and the design process used in engineering

Topic Area(s)

Structural Engineering

Design

Problem-Solving

Grade Level

Grade 1-2

Duration

60-85 minutes

Learning Outcomes:

- Develop an understanding of the different shapes used in engineering and why some shapes are used more often than others
- Learn what a hypothesis is

Hook

Hungry? Just kidding...we don't eat science! But we can learn about engineering and different shapes in this fun activity with toothpicks and marshmallows.

Background Information

A structure is anything that is made out of different materials that come together to do a job. Structures such as buildings keep us warm in the winter. Bridges can often help us move across a body of water. What shapes do you often see in these structures (triangles, squares, circles).

All the pressure on a square depends on where you pushing so with all the pressure in one spot the square is more likely to break. With a triangle the pressure does not end up in one spot depending on where you are pushing but the pressure spreads across the triangle so it's less likely to break. The triangle is a stronger shape than a square!

All structures, even marshmallow towers, are built to support a certain load. Have you ever wondered how really tall buildings stay up? Why do skyscrapers not fall down when wind hits them? Engineers work with architects and scientists to understand what makes materials break, and then use what they learn to design strong structures. Today, you will have the opportunity to figure out how to make a strong structure. Sometimes engineers may be able to find very strong materials, but they cannot use them in a structure because the material is too expensive. Sometimes, engineers cannot use as much material as they might

like due to budget or supply limitations. Just like an engineer, today you will be constrained; you can only use limited types of materials. Your job is to design and build a structure that is as tall and strong as possible, using only marshmallows and toothpicks.

Materials

Per group: In this activity it is difficult to give precise measurements)

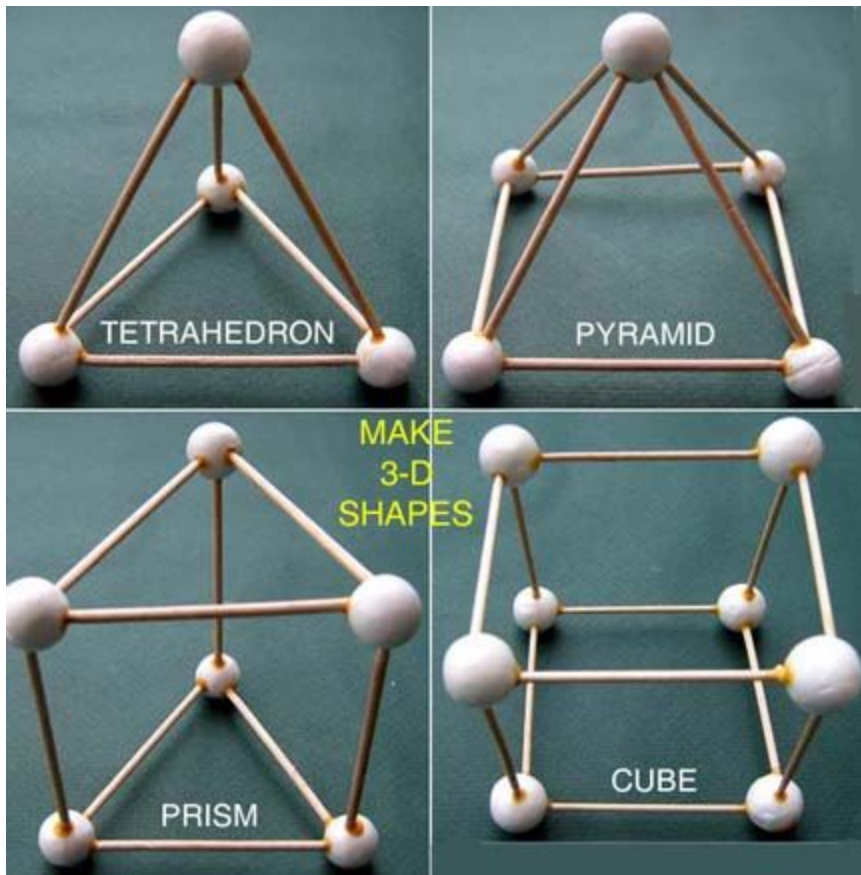
- Toothpicks
- Weight/various objects of different mass (books, stapler, etc.)
- Bag of small marshmallows

Safety Considerations

Don't Eat Science!! Toothpicks can be sharp!

Procedure

1. Discuss background information and emphasize that a triangle is a stronger shape than a square
2. Divide campers into groups of two or three
3. Explain that the goal of the activity is to make the tallest structure that can support the most weight
4. Support the campers in building the structures
5. Test to see what objects the tower can hold



Wrap-Up/Debrief

- What are different materials that might work better? (something stronger, bigger)
- How would you build your tower differently? (bigger base, smaller triangles, etc.)

Additional Resources

None.