Society of Women Engineers
Massachusetts Institute of Technology

SWE Challenge 3: Create a Tower out of Spaghetti and Marshmallows*!

*You can use tape if you don't have marshmallows!

Recommended age: 7-15 years old

Goal: Build the tallest possible tower out of spaghetti and marshmallows! (Stretch goal: make your tower capable of supporting the weight of a small object on top)

Estimated Time: 45 minutes

Prize Deadline: Fill out our survey (linked below) by **November 23th, 2020** to be entered in the raffle!

Materials

- No more than one box of spaghetti
- Up to 15 small marshmallows
    - If you don't have marshmallows at home, you can instead use up to three feet of tape (whatever type you have!)

Introduction

When designing structures, engineers have to consider many factors to ensure their designs will keep people safe and last a long time.

We have an engineering challenge for you! We want you to build the tallest possible spaghetti tower.

It would also be great if your tower were strong enough to support the weight of a small object on the top!

What shapes are the strongest? Watch this video [hyperlink video: https://www.youtube.com/watch?v=pCI6LMWk2ik&t=3s] for a quick demonstration of the strength of a rectangle vs. arch vs. triangle.

Ideally, your tower will be able to stand up on its own, meaning it doesn't need to be taped/stuck to the table or ground.

Feel free to make this as challenging or as simple as you'd like for yourself!

Brainstorm and Design (10 minutes)

See what you have at home and decide whether to use small marshmallows or tape! Then, consider how you might build the tallest possible tower that won't fall over, and that will preferably be able to support the weight of a small object on top!

- *How will you make your tower sturdy enough to not collapse?*
- *How will you make your tower as tall as possible?*

Build and Test (25 minutes)

Try to build your tower as tall as possible! If it falls over, don't worry! You can rearrange or rebuild your tower as many times as you'd like.

If you're going for a tower that can support a small object, check periodically to make sure your tower doesn't collapse under its weight!

Share your tower! (10 minutes)

Measure your design with a meter stick or ruler if possible, and take a picture of your tower being measured! If you don't have a way to measure your tower, don't worry! Still take a picture of your tower and fill out the submission form:

Fill out our SWE Challenge submission form here! [Hyperlink here with https://docs.google.com/forms/d/e/1FAIpQLSc-EEeW-oXA87TTHx4uYd1UDQ9PJhXaPEXbs51q2dpdqlOeiw/viewform].