FAMILY ACTIVITY: SPAGHETTI TOWER CHALLENGE

In this activity, youth will engage with a classic engineering challenge, the spaghetti tower challenge. Youth will be prompted to think about who they consider to be heroes, and to build their spaghetti towers as monuments to heroes of their choice. In this challenge, participants are prompted to work collaboratively* to build as tall of a tower as possible that can support one marshmallow, in a limited time period. Groups are given limited materials to build: 20 strands of spaghetti and one yard each of tape and string. This challenge facilitates youth to think collaboratively and creatively, to test and improve on ideas, and to communicate within a small and large group.

*The activity can also be done by one youth, or in a one-on-one competition.

MATERIALS AND INSTRUCTIONS

Materials (for each group)
- Spaghetti - 20 strands
- Marshmallow - 1 (not a mini-marshmallow)
- String - 1 yard (3')
- Masking or painters tape - 1 yard (3')
- Scissors
- Timer

Instructions
1. ASK Who do you think is a hero? Why do you think that person is a hero?
   - Heroes could be a specific person or a category of people.
2. EXPLAIN that they will build a monument to their hero, and the goal is for the monument to be as tall as possible.
3. Distribute the materials and explain the rules three time before the materials get used:
   a. Using only the materials in front of you, your goal is to build a tower that can stand by itself AND hold one whole marshmallow at the top.
   b. You do not need to use all of the materials given to you.
   c. You will have exactly 18 minutes to complete your challenge.
4. Start the clock and start building, allowing groups/individuals to solve their own problems without interference. Give time updates throughout the process.
5. When the time is up, measure the height of the tower(s) and discuss the process.
6. Repeat the challenge, if desired.

QUESTIONS TO EXPLORE

1. What does it mean to say someone is a hero?
2. What is a monument?
3. Why might people want to build tall monuments to honor their heroes?
   - Possible responses: so people can see them from far away, because big = important, religious purposes (the idea that something high is closer to a god), to assert the power of the person who made or paid for the monument.
4. What is something you learned during this activity?
5. What were some challenges you faced while doing this activity?
6. What are you proud of in your design?

**REFERENCES, MODIFICATIONS, & EXTENSIONS**

**Modifications**
- If there aren’t enough people with whom to compete or collaborate, set up a virtual competition with a friend!

**Extensions**
- Decorate towers to further honor chosen heroes.
- Share an image of their monument with the person(s) who it’s honoring.
- Attempt a similar challenge with different materials or added parameters.
- Learn more about the engineering principles that explain successes or failures in their structures.
- Learn about the design of other relevant structures (e.g. the structures of the Hancock Tower and Eiffel Tower rely on triangles, which groups will often find are useful in spaghetti towers).