

## STUDENT ACTIVITY: The marshmallow challenge

### Student handout: Marshmallow challenge rules

#### Materials

- 20 sticks of dry spaghetti
- 1 marshmallow
- 1 m masking tape
- 1 m string

#### What to do

1. **Build the tallest freestanding structure:** the winning team is the one that has the tallest structure measured from the tabletop/surface to the top of the marshmallow. That means the structure cannot be suspended from a higher structure, like a chair, ceiling or chandelier.
2. **The entire marshmallow must be on top:** the entire marshmallow needs to be on the top of the structure. Cutting or eating part of the marshmallow disqualifies the team.
3. **Use as much or as little of the materials:** you can use as many or as few of the 20 spaghetti sticks as much or as little of the string or tape. You cannot use any other materials.
4. **You can break up the spaghetti, string or tape:** you are free to break the spaghetti and cut up the tape and string to create new structures.
5. **The challenge lasts 18 minutes:** you cannot hold onto the structure when the time runs out. Any team touching or supporting the structure at the end of the exercise will be disqualified.

#### Reflection Questions:

- **Teamwork/Collaboration:**

1. How helpful was everyone on your team? Did anyone appear to be an expert? Were all members of the team able to contribute their ideas?

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2. Did your team try and fail at different approaches before agreeing on a final structure?

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- **Ideas generation:** Where did the ideas come from for building your structure? Did everyone contribute? Were ideas received in a systematic way? Did you use a method of trial and error? Rapid prototyping? Rebuilding? Redesigning? Plan and execute? Did you fail? Did you learn from your failures?

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- **Energy:** Did you feel the time pressure? Did you think that this was a possible task or not? Was there a good vibe in your team?

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- **Cross-Cutting Concepts:**

- a. **What patterns do you notice in other groups structures? What do you notice about the winning team's structure?**

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- b. **What about your structure helped you achieve the goal? How can we apply successful marshmallow structure designs to actual building designs?**

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- **Learning from experience:** After completing the task and watching Tom Wujec's video, what could you have done better? What might you have changed?

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