

68. Marshmallow Tower Competition

Classroom Activity: To build the tallest, free standing marshmallow tower in 45 minutes.

Grade(s): 3 and 5

Strand(s): Understanding Structures and Mechanisms (Grades 3 and 5)

This task addresses the following grade 3 overall expectations:

- investigate strong and stable structures to determine how their design and materials enable them to perform their load-bearing function;
- demonstrate an understanding of the concepts of structure, strength, and stability and the factors that affect them.

and the following grade 3 specific expectations:

- follow established safety procedures during science and technology investigations;
- investigate, through experimentation, the effects of pushing, pulling, and other forces on the shape and stability of simple structures;
- use technological problem-solving skills and knowledge acquired from previous investigations, to design and build a strong and stable structure that serves a purpose;
- use appropriate science and technology vocabulary, including compression, tension, strut, ties, strength, and stability, in oral and written communication;
- use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes;
- define a structure as a supporting framework, with a definite size, shape, and purpose, that holds a load;
- identify structures in the natural environment and in the built environment.

This task addresses the following grade 5 overall expectations:

- investigate forces that act on structures and mechanisms;



- identify forces that act on and within structures and mechanisms, and describe the effects of these forces on structures and mechanisms.

and the following grade 5 specific expectations:

- follow established safety procedures for working with tools and materials;
- use scientific inquiry/research skills to investigate how structures are built to withstand forces;
- use technological problem-solving skills to design, build, and test a frame structure that will withstand the application of an external force or a mechanical system that performs a specific function;
- use appropriate science and technology vocabulary, including tension, compression, torque, system, and load, in oral and written communication;
- use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes;
- identify internal forces acting on a structure, and describe their effects on the structure;
- identify external forces acting on a structure, and describe their effects on the structure, using diagrams.

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Assessment Categories:

- Knowledge and Understanding
- Thinking and Investigation
- Communication
- Teambuilding Skills

Type of Activity: Classroom

Time needed to plan: 2 hours

Time needed to complete activity: 1 hour

Materials/Resources for teachers:

Small marshmallows

Toothpicks (round)

Piece of paper with a 15cm by 15cm Square drawn on it

Metre stick

Stopwatch

Activity Description:

In this activity, teams of four build towers made of marshmallows and toothpicks. The object is to build the tallest, most stable tower in 45 minutes.

After explaining the activity, each team is given a piece of paper with a square 15cm x 15cm drawn on it. The

base of the tower must fit in this square, however the structure above the base may hang over the square. Teams are given a bowl of marshmallows and a handful of round toothpicks. The teams build a marshmallow tower by sticking 2 or more toothpicks in each marshmallow. Because triangles are the strongest structures, students learn this by building the tower using triangles. At the end of 45 minutes, students are told to stop building (they are given warnings at the 5, 3 and 1 minute). If their structure is unstable, they may hold it until it is measured.

The EIR and teacher go to each group with a metre stick to measure and record the height and stability of the tower. If the tower stands still for 60 seconds, it is eligible. Penalty points are deducted if any part of the base is outside the 15cm x 15cm square on the paper.

The winning team is the one with the tallest and most stable tower with no penalty points.

Tips:

Students can eat the towers afterwards.

Buy LOTS of toothpicks and marshmallows, but the toothpicks MUST be round, otherwise the activity will not work.