

Mystery Architecture

Grades: 2 - 5
Team Size: 1 - 2 participants
Duration: 30 minutes
Supervisors: Raj Subramanian

Summary Description

The goal is to use the given materials to build the tallest free-standing tower that can hold a tennis ball on top until the measurements are recorded.

Concepts Covered

Engineering

Rules/Competition Format:

Competition and Rules:

1. All students need to report 5 minutes before the session starts. The session will start and end on time. If the students are late to the session, they will not be granted additional time and *WILL* miss critical instructions and material verification as described in step 2.
2. Each team will be given a bag (similar in size to a Kroger/Meijer plastic grocery bag) of building materials. All teams in each grade will receive exactly the same materials. (The Supervisor will have a list of the materials and will read out the items and their quantities so that the students can verify before they start building. The bag containing the materials **cannot** be used for building and should be returned to the Supervisor). They can begin construction at the supervisor's signal.
3. Every team is provided with their own work/floor space (non-carpeted, generally tile).
4. The structure must be built on the floor and should be freestanding (i.e., not attached to the floor with tape, or leaning against another object or person)
5. The students will have 20 minutes to complete their structure.
6. There will be about 10 - 15 items with which the students can build their structures.
7. Every team will be provided with a pair of scissors and three strips (one foot each in length) of masking tape (Scotch brand masking tape, 0.75 inch width max). The participants will not be allowed to bring any tools. The tape will hang from a piece of furniture and can be cut as needed.
8. Students do not have to use all the materials provided.
9. Students are notified when to start and the timer is run down from that point onwards.
10. The students are notified approximately every five minutes. A two-minute warning is provided before the end of the 20-minute session. After the 20 minutes are over, each team is requested to step away from the structure.
11. Students will be provided with a WESO tennis ball if they need one for testing purposes during the competition. The tennis ball cannot be taped to the structure. If the structure

falls during the trial prior to twenty minutes, the students can rebuild and carry out adjustments.

Note: The 'WESO' tennis balls (measured for equivalency in weight) are the test balls used by supervisors to make the final measurements.

12. A measurement (height and maximum base) is with the tennis ball load (placed by students) and will be recorded and considered for scoring. We suggest (and encourage) that the students ask for a measurement when they have a decent build so that they have something on record. If the structure holds the tennis ball (placed by students), that measurement will be recorded by the Supervisors. The students can continue building a taller structure after a measurement of the interim structure is recorded (provided it is within 20 minutes). In case the structure falls at the end of the event, we will consider the best of the measurements they have on record. Even if the structure is intact at the end of the build, we will consider the best of the 'recorded' measurements.

Note: We will have supervisors and sufficient volunteers in the test room. Students can raise their hand or voice a request for a 'measurement'. A reasonable number of requests can be made. Keep in mind that there will be several teams in the same room making requests and we will take them on a 'first come, first serve' basis. All this happens in the '20 min' build time and **we do not stop the clock if they ask for a measurement.**

13. **Once the entire build is completed, the team should inform the supervisors.** They will be asked to balance the WESO tennis ball on top of their tower. Since no building materials are to extend above it, the top of the tennis ball will be considered the highest point of the tower. The top of the ball must be visible. The tower must remain standing until the measurements are recorded.

Scoring:

1. The supervisors will measure the height and maximum base (width/length) of the tower.
2. **The structure with the tennis ball has to be standing for the measurement to be recorded by the Supervisors.**
3. The tallest free-standing tower that can support the tennis ball wins.
4. If none of the structures balance the ball, there will be no awards for that event.

Tie Break Criteria:

If there is a tie on the height, the structure with the smallest base width wins.

Materials Distributed by WESO:

Not applicable

Additional Materials useful for practices:

Not applicable

Materials to be brought to competition:

None. All materials needed for the event will be provided by WESO.

Example Questions:

The materials might include paper, pins, cups, straws, paper clips, etc. THIS LIST IS ONLY AN EXAMPLE OF THE MATERIALS WHICH MAY BE USED.

Event Questions

Please go to <https://wesoscience.org/events/> for information on how to submit questions about this event.