

# ENGINEERING MODEL - TOWER DESIGN

(TEAM OR INDIVIDUAL; COMPETITIVE; ON-SITE CONSTRUCTION)

## DESCRIPTION:

Entries will display student ability to design and fabricate a tower on-site after doing preliminary experimental engineering model at their home school. The problem will be for each team or individual to design, document, and build the tallest possible structure, using drinking straws and masking tape. The responsibility will be to construct the "Leaning Tower of Tennis Ball", the tallest possible, free standing tower, made of limited materials, in a limited amount of time, that will support a tennis ball for at least 30 seconds.

## GENERAL RULES AND REGULATIONS:

1. Entries may be individual or a maximum of two (2) students.
2. Time limit for construction ON-SITE will be 30 minutes.
3. Materials used for construction:
  - a. Drinking straws - 30
  - b. Masking tape - 24 inches
4. **Straws, tape, and tennis ball (unmodified) will be provided for each team or individual.**
5. The tower must be free standing.
6. The tower cannot be taped to the floor or any other support.
7. The tower must support a tennis ball at it's top for 30 seconds during testing.
8. Scissors are the only cutting tool allowed during construction. These are to be provided by the student.
9. Documentation must be typed or produced electronically. Drawings and sketches can be done by hand.
10. Documentation of the problem solving process used in developing the model must be provided to the coordinator. Documentation should be done prior to on-site competition.

### Basic Problem Solving Steps:

- c. Define the Problem
- d. Gather Information
- e. Set Goals
- f. List Solutions
- g. Select the Best Solution.
- h. Apply the Best Solution
- i. Evaluate

## CRITERIA FOR JUDGING:

Awards will be determined by the tallest height achieved, after supporting a tennis ball for 30 seconds.

11. Definition of problem - 5 points
12. Information and data - 10 points
13. Goal statement - 5 points
14. Written and sketched solutions - 5 points
15. Written information and sketches of chosen solution - 10 points
16. Evaluation statements - 5 points
17. Height ranking - 1st, 60 pts.; 2nd, 55 pts.; 3rd, 50 pts.; 4th, 45 pts.; 5th, 40 pts.; etc..

**ANY RULES AND REGULATIONS VIOLATION - (-20 POINTS)**

**TOTAL POSSIBLE - 100 POINTS**

## AWARDS IN LEVELS I AND II.

