

ENGINEERING MODEL – STRING ROCKETS

(INDIVIDUAL OR TEAM; COMPETITIVE; ON SITE CONSTRUCTION)

DESCRIPTION:

The purpose of this event is to provide students (in teams of two) with an experience in problem solving. The problem consists of designing and building a rocket that will travel along monofilament fishing line the farthest distance, built from only the materials provided which are: 1-manilla folder 9x11 3/4 (non-legal), 2-paper clips (metal), 12" of string, 20" masking tape, 1-plastic drinking straw, and one balloon elongated-type.

GENERAL RULES AND REGULATIONS:

- 1.Entries may be individual or a maximum of two (2) students.
- 2.All materials (folder, string, tape, straw, paper clips, and balloon) will be provided. Tools are not provided.
- 3.Teams will provide their own scissors, rulers, compasses, protractors, etc.
- 4.There are no size limitations.
- 5.Teams must use a minimum of three of the materials provided (must have function not just attached to meet requirements), not including the balloon.
- 6.Teams will have a one (1) hour period to construct and test their rockets with modifications allowed between trials.
- 7.Teams will have three trials with a 15 minute period (maximum) between each trial to make modifications.
- 8.Distance is measured from front tip of rocket at starting point to front tip at ending point, or front-end of whatever piece of rocket remains on the line.
- 9.Tightness of line is set at judge's discretion but will not sag more than 1-2" at center point.
- 10.Rocket must be able to be placed on line in less than 30 seconds or trial is forfeited.
- 11.Balloons that burst will be replaced and trial is re-done. (Maximum of 5 balloons per team for event)
- 12.Rockets leaving the line forfeit their trial, are not measured, and may not be re-done.
- 13.Documentation must be typed or produced electronically. Drawings and sketches can be done by hand.
- 14.Documentation of the problem solving process used in the development of the model must be provided to the coordinator. Documentation should be done prior to on-site competition.

Basic problem solving steps: (Must accompany project and be done electronically, handwritten not acceptable)

- a.Define the problem
- b.Gather information
- c.Set goals
- d.List solutions
- e.Select the best solution
- f.Apply the best solution
- g.Evaluate

CRITERIA FOR JUDGING:

Teams with the greatest distance will receive awards.

- 15.Definition of problem - 5 points
- 16.Information and data - 10 points
- 17.Goal statements - 5 points
- 18.Written and sketched solutions - 5 points
- 19.Written information and sketches of chosen solution - 10 points
- 20.Evaluation statements - 5 points
- 21.Construction and Design - 10 points
- 22.Distance ranking -1st - 50 pts, 2nd - 45 pts, 3rd - 40 pts, 4th - 35pts, etc.

ANY RULES AND REGULATION VIOLATION - (-20 POINTS)

TOTAL SCORE - 100 POINTS POSSIBLE

AWARDS IN LEVELS I AND II.

