

The Box

- Level:** Elementary/Grades K-5
Middle School/Grades 6-8
High School/Grades 9-12
- Teams:** 2-4 Students per team
- Overview:** Students will build a mechanism to move an object the farthest distance possible.
- Materials:** Students will be given a pre-filled box of **10** of the below items:

1. 5 Pipe Cleaners
2. 4 Zip Ties
3. 10' of String
4. 5 Rubber Bands
5. 10 Paper Clips
6. 4 Binder Clips
7. 10" x 15" Foam Poster Board
8. 9" x 18" Cardboard
9. 20 Craft Sticks
10. 3 - 1' Segments of PVC and 3 T-Adapters
11. 1' Segment of Cardboard Tube with End Cap
12. 4 Wheels with Axel
13. 4 Wooden Beads
14. 10 Drinking Straws
15. 4 - 6" Dowels
16. 2' of Foam Pipe Insulation
17. 2 Balloons
18. 4 Sheets of Printer Paper
19. 1 White Lunch Paper Bag
20. 1 Sheet of Card Stock

Rules:

1. Each team is given a random box of materials.
2. The teams are then told that their objective is to "Build a mechanism to move **an object** the farthest distance possible."
3. Teams do NOT have to use all 10 items provided in their box.
4. Teams will have 20 minutes to build and test their designs before they must have a judge come to score the device.
5. Trials will be performed in the designated test area.
6. Teams will get two trials to achieve the best score possible. The better of the two trials will be the team's final score. Teams may not modify their design in between trials, only repair if needed.
7. 100cm of Masking Tape will be provided to each team.

8. A desk fan is available as an option for power source.
9. Hot Glue and Scissors will be available for use at a central table.
10. Colored pieces of paper and pencils will be available for teams to draw out their designs if desired, but the paper and pencils are not to be used as materials to build the actual mechanism.
11. After the team has completed both trials and the judge has recorded the scores, the team must return all unused supplies to the judges at the supply table along with **the object**.
12. Mechanisms cannot be attached to walls, tables, or anything other than the floor.
13. Students are not allowed to climb on anything or anyone.
14. Students are not permitted to use any part of their body (hands, feet, etc.) to propel the object.

Judging:

1. The object will start lined up behind the starting line.
2. When the object comes to a stop, the distance the object traveled away from the starting line will be measured and recorded.
3. Each team gets 2 trials, the greater distance of the two will be the team's final score.

Awards:

Awards are given for 1st, 2nd, and 3rd place for each grade level. In the event of ties, duplicate awards may be given.