

Worthington Science Day

Engineering Design Challenge 2015

Grades 4-6

The Challenge:

We want you to design a machine to move 10 marbles along the top of a table and into the special bucket on the floor. The judges will show you the table and the bucket.

The Details:

These things need to be true about your machine:

- 1) You can only use the materials we give you.
- 2) You can't use any more materials than what we give you.
- 3) You can't make any changes to the table.
- 4) You can only start your machine by giving it one push or pull behind the tape line on the table.
- 5) After the machine passes the tape line, you can't touch it.
- 6) You can't do any tests with the table or bucket that will be used in the final test.

How the Process will work:

- 1) You will have 40 minutes to design and build your machine.
- 2) All the teams will place their finished machines on a special table while you wait for your turn to test it.
- 3) Each team will get to run their machine 2 times.
- 4) You will have 1 minute from when we say it's your turn until you start your machine moving.
- 5) Before you start your machine, you can move the target bucket to another place on the floor, as long as it is past the end of the table.
- 6) If you want someone to hold the bucket in place, you can ask a judge to do that.

How to Win:

The target consists of two areas. A marble in the center area will receive 1 point, while a marble in the outer area will receive half a point. Therefore, a perfect score will be 10 points. You'll get two tries, and the highest score from either try will be the winner.

In the case of a tie, the winner will be determined by the following tie-breakers:

- Total points of the two runs
- Most marbles in center target on best run
- Most marbles in center target on both runs
- Lightest machine

Other Rules: You can't talk or communicate with anyone who is not on your team, except for the judges, during this design challenge. This means that your parents are not allowed to help you. You also are not allowed to use any electronic devices during this challenge.