

Don't Lose Your Marbles Engineering Challenge

Background: We have been studying linear measurement and right angles. You will apply what you have learned in math class to complete this challenge.

Design Challenge: You will work in teams to design and build a freestanding structure that has a track on which a marble can travel. You will be awarded points for the height of the structure at the point where the marble begins its ascent down the track. Points will also be awarded for each right angle turn in the track. You will be allowed 5 marble rolls. You will start each marble at the top of the track and let it go. You will receive points for each marble that successfully travels all the way down the track. Additional points will be awarded for marbles caught in a container at the end of the track. You will receive points for meeting the following criteria:

1 point - for each centimeter of height

5 points - for each 90° angle turn in the track

1 point - for each marble that successfully travels the entire length of the track, but does not land or stay in a container at the end of the track

5 points - for each marble that travels the track and stays in a container at the end of the track

Materials: You may only use the materials provided. (Teacher may substitute similar building materials.)

6 art straws or drinking straws

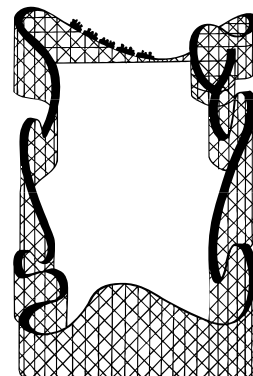
10 Q-tips

6 index cards

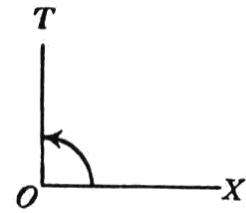
$\frac{1}{4}$ stick modeling clay

12 " masking tape

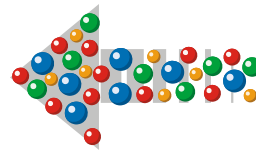
1 small paper cup



Points



- _____ Height (1 point for each centimeter of height)
- _____ 90° angles (5 points for each right angle in track)
- _____ Successful run, but marble does not stay in container (1 point)
- _____ Successful run and marble stays in container (5 points)
- _____ **Total points**



Evaluate your solution.
Was it your best solution?

What could you have done differently?

Describe the math skills you used in this challenge.

