Table of Contents
01 Test Rig and Plan View
02 Test Rig and Elevation View
03 Test Rig Course Plan View
04 Test Rig Run Directions
05 Test Rig Home Built Samples
Course Specifications from Rules are as follows:

1. The course consists of three tracks, labeled Track A, Track B and Track C.
2. Each track is 23 inches wide and 8 feet long, with 2-inch curbs.
3. Midway down Track A is a tunnel. The tunnel is 19 inches long, 23 inches wide and 16 inches high at the center.
4. Tracks B and C have specific terrains the device must cross.
   a. Track B contains 100-grit sandpaper and low-pile carpet 1/4" thick.
   b. Track C has Type A and Type B pegboard with 1-inch hole spacing and hole diameters of 3/16" and 1/4", respectively.
5. Teams can tilt Tracks A and B in both directions like a seesaw to assist device movement. The tilt is measured from the raised end of the track.
6. The amount of tilt on the first two tracks is:
   a. 6" for Grades 4-6.
   b. 4" for Grades 7-8.
   c. 2" for Grades 9-12.
7. Track C does not tilt.

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The Tech Challenge 2019  
Test Rig Home Built Samples

**Materials and tools:**
- Cardboard or foamcore board
- Duct tape
- Push pin
- Pencil
- Yardstick (ruler if you don’t have a yardstick)
- Box cutter
- 100-grit sandpaper
- Floor mat from the dollar store (3/16” thick, low-pile carpet)
- 8 long paint sticks or 4 yardsticks per track
- Pool noodle
- 2x4’s or books
- Elmer’s glue

*(For simple home testing use any smooth floor or table and a low-pile carpeted floor)*

**Fabrication Directions:**
See detailed rig drawings in this file for additional measurements.

- Tracks need to be 23 inches wide. Build with cardboard or foamcore wider than 23 inches and use the excess to fold up and make curbs. The widely available 20” x 30” size works very well.
- Measure 23 inches in the middle of your cardboard or foamcore to create the track. Mark both sides of the track with a pencil.
- Use your ruler or yardstick to draw two guidelines, one for each side of the track.
- Using the ruler or yardstick as a guide, score your cardboard or foamcore with the box cutter. Don’t cut all the way through!
- Fold up the edges into curbs.
- If you did cut the pieces off the sides, you can always tape them back on.
- Repeat this process with additional pieces of cardboard or foamcore to create a 96-inch (8-foot) track.
- Cut two additional pieces of cardboard or foamcore to use as the curbs at the ends of each track.
- Tape everything securely.
- Turn your track over. Teamwork! Don’t try to do it yourself or it may twist and come apart.
- Attach the paint sticks or yardsticks to the other side of your track, across the seams between cardboard or foamcore pieces, to reinforce it. This will help it stand up to multiple tests over time.
- Track A—Tunnel Track: cut the pool noodle to 49 inches long. Use the pool noodle to make a tunnel that is 16 inches tall and 23 inches wide. Attach the ends to the outside of the curbs, at the bottom, with tape.
- Track B—Sandpaper and Carpet Track: glue a 6-inch long piece of 100-grit sandpaper onto the surface of the track, covering the track’s full width.
- Insert the floor mat or carpet between two pieces of cardboard or foamcore like the picture to create the rest of Track B. Tape the back of the mat to the neighboring sections of track and use several paint sticks to reinforce.
- Track C—Pegboard Track: to simulate pegboard, punch holes in your cardboard or foamcore. Use your push pin to punch each hole, then use your pencil to widen the holes. Make one section of small pegboard holes and one section of large pegboard holes.

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