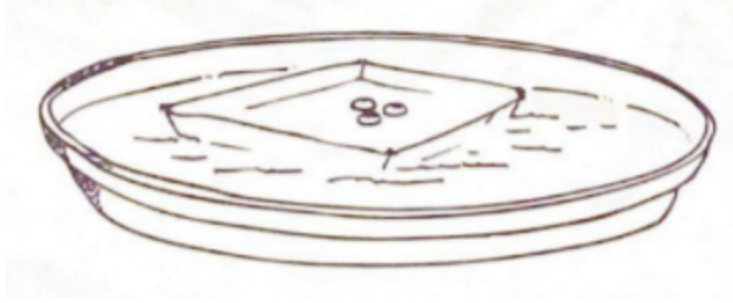


San Ramon Valley Science Olympiad  
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## Barge Building



**Description:**

Teams construct a barge that can hold as many pennies as possible without it sinking in water.

**Number of Participants: 2**

**Approximate Time:** 5-10 minutes

**The Competition:**

1. Competitors must design and construct a barge prior to the competition with maximum dimensions of 1.5 ft x 1.5 ft that will float in a pool containing 5 gallons of water
2. The only materials that are permitted for this barge are:
  - a. 30 in x 12 in aluminum foil sheet
  - b. 40 popsicle sticks (any size is fine)
  - c. Glue
  - d. Tape
3. The entire barge must fit within a 3 ft x 3 ft space when in ready to run configuration. There is no limit on the height of the barge.
4. Before placing the barge, both participants must estimate how many pennies the barge can hold. Afterwards, this estimate will be compared to the actual number of pennies the barge holds.
5. Both participants must decide which one of them will place the pennies on the barge. Pennies can be placed anywhere on the barge (a penny that slips off will not be counted towards the final score)
6. The round is over when water starts to fill into the barge.

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**Scoring:**

The following scoring rubric will be used:

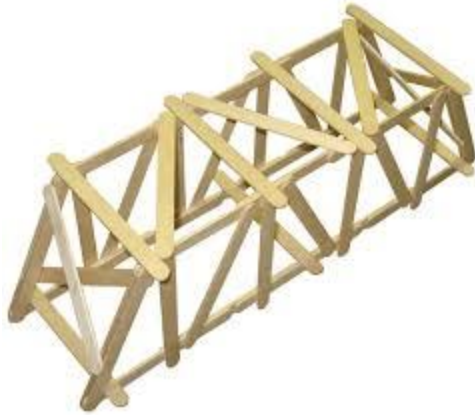
	<b>Guidelines</b>	<b>Points</b>
A	Did participants only use the materials specified in the guideline?	<b>0</b> - 3 or more materials not listed in guidelines are used <b>1</b> - 1 or 2 materials not listed in guidelines are used <b>2</b> - only materials stated in the guidelines were used
B	How many pennies does the barge hold?	<b># of pennies placed</b>
C	What was the difference between the predicted and actual number of pennies held by the barge?	<b>Result from last row minus the # of pennies predicted to be held</b>
	Total	<b>A + (B * 10) - C</b>

\*Greatest number of points wins

**Resources:**

<https://www.sciencebuddies.org/stem-activities/aluminum-foil-boats-float>

## Popsicle Stick Bridge



**Description:**

Teams construct a bridge that can hold as much weight as possible above a gap.

**Number of Participants:** 2

**Approximate Time:** 8 minutes

**The Competition:**

1. Competitors must design a bridge using appropriate materials with the adhesives only placed at joints. Weight will be placed on the bridge above a gap 4 inches wide. The appropriate materials are 50 popsicle sticks within 6 inches.
2. The bridge should have an area that is obvious of where to place the weight or marked by the participants. This spot should be relatively close to the center of the bridge. The amount of popsicle sticks used will also be judged during this period.
3. When placed there should be 1-2 inches of each end of the bridge on the tables. Once placed it can not be placed by the participants.
5. The judge will place the weight on the designated area with 3 second intervals between each weight. If there are signs of instability the next weight will not be placed until it regains stability. The weight will be based on the weight of every 100 grams of sand held.
6. The round ends when the bridge breaks and the judge will record how much weight was placed before it collapses

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**Scoring:**

The following scoring rubric will be used:

	<b>Guidelines</b>	<b>Points</b>
A	Did participants only use the materials specified in the guideline?	
B	How many popsicle sticks were used?	
C	How much weight did the bridge hold?	
	Total	

\*Greatest number of points wins

**Resources:**

<https://www.garrettsbridges.com › popsicle-bridges › sh...>

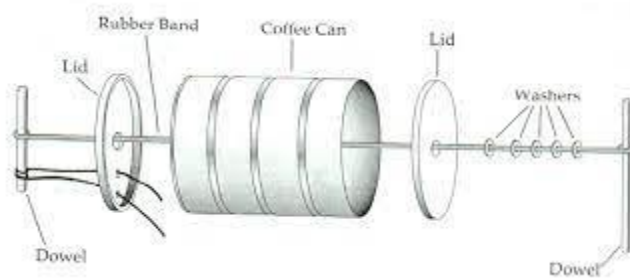
[Popsicle Stick Bridge : 9 Steps \(with Pictures\) - Instructableshttps://www.instructables.com › Workshop › Science](#)

[How to Build a Popsicle Bridge That Will Hold 50 Poundshttps://ourpastimes.com › Crafts › How-to-make](#)

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## Can Race



**Description:**

Participants will design, build, and bring a racer using cans and other common household items

**Number of Participants: 2**

**Approximate Time:** 5 minutes, including set up and the race

**The Competition:**

1. Participants will work to utilize cans, as well as other accepted materials, as the base of their racing device

Accepted materials include:

- a. Any sort of can
  - b. Any type of rubber band
  - c. Any type of metal washers
  - d. Dowels, popsicle sticks, pencils, etc for the running arm
  - e. String, tape, or glue to attach the smaller dowel to the can
2. Participants will start by drilling a hole in the center of the top and bottom of their selected can. They will then feed a rubber band across the length of the can through the holes they drilled, and attach one side to a dowel secured to the can. On the other side, students will feed the rubber band through washers, and a longer running arm, in order to ensure the running arm does not touch the can during the race
  3. At the start of the race, participants will wind up the running arm, and let it go on the course when directed. The course is to be raced on a hard, even surface, and will have barriers to make up the lanes
  4. Racers may not be pushed at their release, or touched at any point during the race
  5. Stuck racers will have their "run length" measured at that specific point, and those that have veered off the course will be ranked after the ones that stayed on the course
  6. In the event that two racers go the exact same distance, the racer that did so in a faster time will be ranked higher

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**Scoring:**

Guidelines	Points
Usage of appropriate materials (score may vary depending on extent of extraneous material use)	0-5
Did it stay on track?	10 if yes, 0 if no
Distance traveled	10 * distance traveled (meters)
Was the can pushed or touched at the beginning or any point during the race?	10 if no, 0 if yes
Did the can get stuck against the lane barrier?	5 if no, 0 if yes
Total	Add all above criterion

**Resources:**

[https://www.youtube.com/watch?v=oPmNQeTxD\\_A](https://www.youtube.com/watch?v=oPmNQeTxD_A)

<http://www.cacmp.org/userfiles/23/my%20files/can%20race%202017%20elementary%20science%20olympiad.pdf?id=3873>