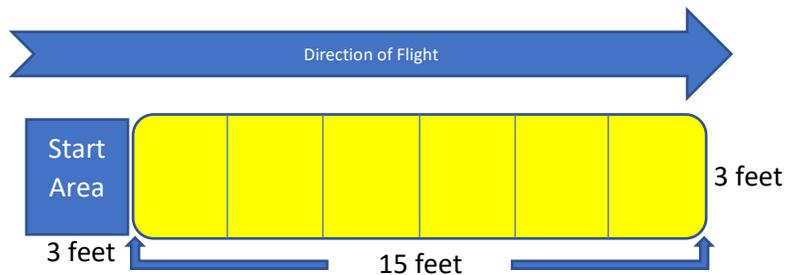


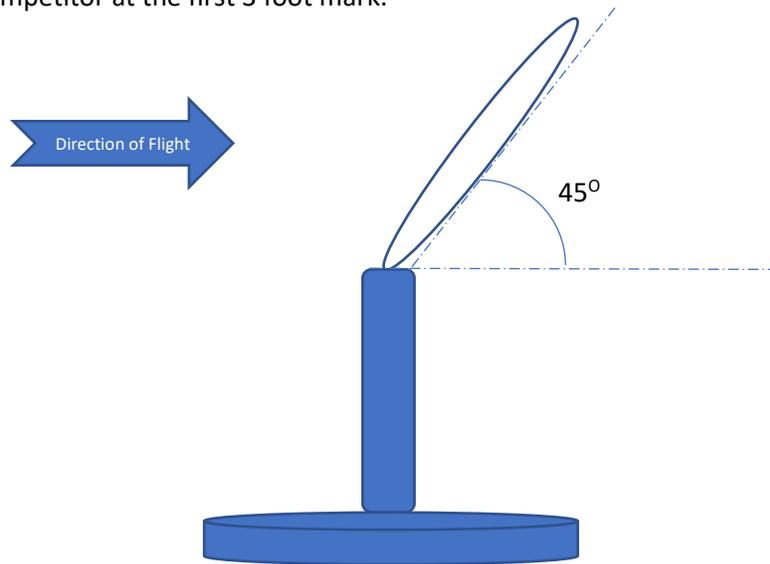
Lineman Rodeo Science Center 2022 Competition Rules

Paper Airplane Competition

1. Materials
 - a. Two sheets of paper (Two airplanes can be folded, one serves as a backup (flies over the fence etc.)
2. Setup Materials (For Judges)
 - a. Tape
 - b. Measuring Tape
 - c. [Hoops](#) (10.2 inch, 9 inch, 7.6 inch, 6 inch, 4.7 inch, 3.4 inch)
 - d. [Hoop stand](#)
 - e. Stop watch
3. Rules
 - a. Competitors may only use the materials listed in the materials list
 - b. No Age Divisions
 - c. Competitors cannot leave the Start Area during each attempt
 - d. Competitors may have up to two airplanes, and may choose to throw either one during each attempt
 - e. Competitors may have up to 10 seconds per attempt
4. Competition Procedures
 - a. 2 Judges recommended. One Judge should stand at the start area to instruct the contestants when to start. The other will stand by the hoop to confirm whether or not the plane enters the hoop.
 - b. Judge will mark out lines with tape every 3 feet to a maximum of 15 feet (or as space allows). See figure below:



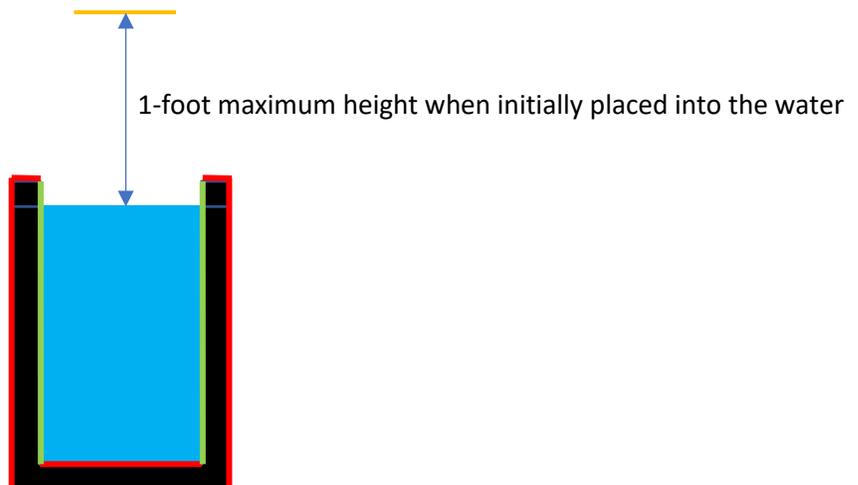
- c. Judge will place the stand with the 10.2 inch hoop angled at a 45 degree angle facing the competitor at the first 3 foot mark.



- d. Competitors have 3 attempts to throw the plane into the hoop. Competitors will have up to 10 seconds per attempt to throw their plane. Any contestant who fails to throw their plane within the 10 second time frame will be considered to be forfeiting that attempt.
- e. Should every competitor fail to throw their plane into the hoop within their 3 attempts, step d is repeated until at least one competitor is successful.
- f. If multiple competitors are successful, the hoop is incremented to the next 3 foot mark. Repeat steps c through e until only 1 competitor is left.
- g. If multiple competitors are able to reach the 15 foot mark, the judge will replace the 10.2 inch with the next smaller size (9 inch) placed at the same 15 foot mark. All competitors will then have three attempts to make it into the smaller hoop. If multiple competitors are able to successfully send their planes through the smaller hoop, replace the hoop with the next smaller size. Repeat as necessary until there is a sole successful competitor. The sole successful competitor who is able to make it into the hoop within 3 attempts wins the competition.

Boat Competition

1. Materials (Competitors are encouraged to use as many materials as they require)
 - a. Disposable plates
 - b. Disposable bowls
 - c. String
 - d. Weights (BBs)
 - e. Balloons
 - f. Ziplock bags
 - g. Tape
 - h. Hot Glue
2. Setup Materials (For Judges)
 - a. Large Container
 - b. Water (to fill container)
 - c. Weight Bowl
 - d. Weights
 - e. Digital Scale
 - f. Stop watch
3. Rules
 - a. The boat is defined as anything that is constructed or placed by the contestant.
 - b. The contestant cannot touch any part of the boat after the weight has been added.
 - c. At no point can the boat use the bottom or outer sides of the container for support.
 - i. I.e. the boat cannot touch the top of the rim of the container or any external surfaces of the container, nor can it touch the bottom of the container. See red areas below outlining the disallowed areas. The boat may come in contact with the green areas.
 - ii. When placed in the water, with no load, no portion of the boat can exceed 1 foot in height, as measured from the surface from the water.

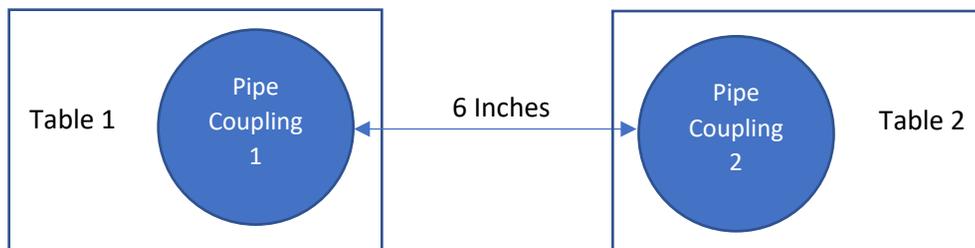


- d. No portion of the boat can be higher than the rim of the Weight Bowl.

- e. The contestant will have up to 30 seconds to place and prepare the boat into the container.
 - f. The weight bowl must be placed upright.
4. Competition procedures
- a. The Judge will fill up the large container with water so that the water level is 2 inches from the rim of the container.
 - b. The Judge will weigh and record the weight of the boat on the digital scale.
 - c. The contestant will place the boat into the water of the large container.
 - d. The contestant will place the Weight bowl into the boat.
 - e. The judge will begin to add weights to the Weight Bowl.
 - f. The Boat will be considered “sunk” when water reaches the weights in the Weight Bowl.
 - g. When this happens, no additional weights shall be added and the judge will remove the weights from the bowl for measurement. (Weights should be dried to prevent weighing the extra water).
 - h. The Judge will measure and record the weights held.
 - i. The judge shall determine the score will be determined by dividing the highest weight held (as measured in step h) by the weight of the weight as measured in step b.

Bridge Competition

1. Materials (Competitors are encouraged to use as many materials as they require)
 - a. Gum Drops
 - b. Toothpicks
2. Setup Materials (for Judges)
 - a. Two PVC Pipe couplings (as stands)
 - b. Two PVC Capped Pipes (as stands)
 - c. Digital Scale(s)
 - d. Toy cars (for size measurement)
 - e. Ziplock bag
 - f. Weights (BBs)
 - g. Tape
 - h. Stop watch
3. Rules
 - a. The bridge can only be constructed with Gum Drops and toothpicks
 - b. The bridge may only come in contact with the pipe couplings when initially placed.
 - c. The width of the bridge must be able to hold at least 1 toy car.
4. Competition Procedures
 - a. For each coupling, the Judge will measure and record the weights of all coupling stands and write their respective weights on each coupling.
 - b. Contestant will choose which of the two coupling styles they would like to use for their bridge.
 - c. Judge will tape two pipe couplings of each style 6 inches apart (as measured from end to end of the pipe couplings) to a level surface between the ends of two tables. See top down diagram below:



- d. Contestant will then place their bridge on the digital scale for measurement

Note:

If the contestant elects to build their bridge directly into the couplings, the judge must first measure the dimensions to make sure the distance between the couplings are exactly 6 inches apart.

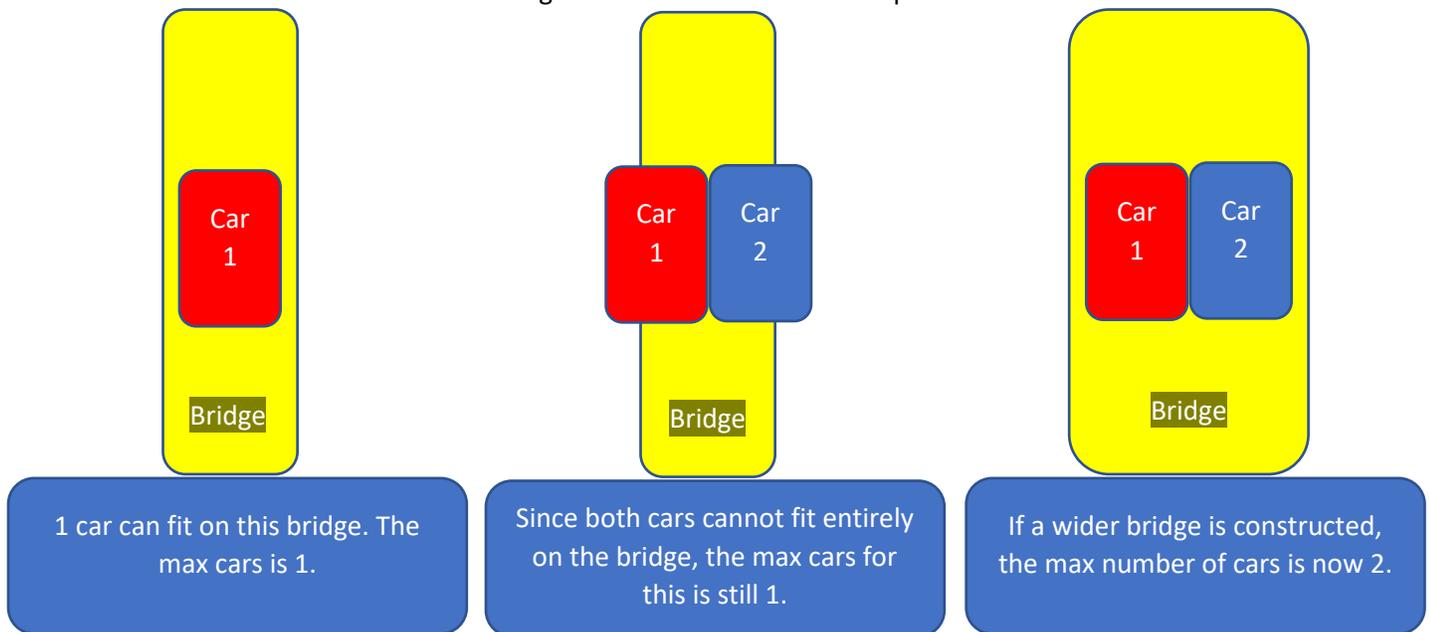
- e. Judge will measure and record the weight of the bridge using a digital scale.

Note:

If the contestant elects to build their bridge directly into the couplings, the contestant will place their bridge (and coupling) onto two digital scales, with one coupling on each scale.

The Judge will measure and record the bridge's weight which will then be:
 $\text{Scale 1 Weight} + \text{Scale 2 Weight} - \text{Weight of Coupling 1} - \text{Weight of Coupling 2}$

- f. Contestant will have up to 30 seconds place the bridge on the couplings.
If the contestant elects to build their bridge directly into the couplings, the Contestant will place the bridge between the two tables, and the Judge will tape down the Couplings between the tables.
- g. Contestants will place the toy cars adjacent to each other, width wise on the bridge, to measure the max cars that the width of the bridge can handle. The bridge must be able to fit at least 1 car. The largest amount of cars that can be fit, side by side, at the smallest width of the bridge will be recorded. See example scenarios below:



- h. The Contestant will place the ziplock bag on the bridge at a location of their choosing. Any location is allowed as long as it is between the two couplings and weights can be added into the bag.
- i. The judge will then slowly start adding the weights into the bag until the bridge collapses. If the bag falls off the bridge, the bridge is considered "collapsed".
- j. The judge will measure and record the final weight held in the bag before the bridge collapsed.

- k. Scores will be calculated as follows:
 - i. Base score = weight held in bag (measured in step j)/weight of bridge (measured in step e)
 - ii. Bonus value = is the following if the number of cars (as determined in step g) is:
 - 1. 1 -> Bonus value = 1
 - 2. 2-> Bonus value = 2.1
 - 3. 3-> Bonus value = 3.2
 - 4. 4-> Bonus value = 4.3
 - 5. 5-> Bonus value = 5.4
 - iii. Actual Score = Base score * Bonus value
- l. Actual score is calculated and recorded. Highest recorded actual score wins.