

## Cardboard Boat Competition 2025

**Level:** Middle and High School (6<sup>th</sup> – 8<sup>th</sup> & 9th-12th)

**Type of Contest:** Team

**Composition of Teams:** 3-5 students per team; 2 people must be on boat and 1 person helps the other team members board the boat.

**Overview:** Students will work as an engineering design team with the goal of building a cardboard boat that travels the length of a high school pool in the least amount of time.

**Materials:** Only the following materials are permissible:

- ANY TYPE of cardboard (Provided by Students)
- Cardboard Tubes may be used
- Water-based polyurethane (Provided by MESA)
- Oars or paddles (Provided by MESA)
- Any kind of tape (Provided by MESA)

**Rules:**

1. Tape can only be used to cover joint areas in any direction and any amount; tape cannot be used to fully cover any surface area on the boat (i.e., side, bottom, inside, etc.)
2. Duct tape, masking tape, or other tape adhesives CAN be used to connect cardboard to cardboard and CAN be used to reinforce all seams and stress points. It CANNOT be used to waterproof boats. All shipping labels, decals, or adhered material must be removed from any recycled cardboard.
3. Boats Size: Maximum boat size is 6 feet wide, 8 feet long, and a minimum of 1 foot high. Rafts will automatically be disqualified.
4. Boats submitted the day of competition, must be competition ready (fully dry and constructed). No taping of the boat will be allowed after registration.
5. Teams may use as many coats of polyurethane as deemed appropriate. The MESA center will provide a provision based upon the number of teams from the school participating in this competition.
6. Boats that appear to be wet due to recent polyurethane coatings or flimsy with loose parts will be disqualified.  
**NOTE: It takes water-based polyurethane about 3 days to dry, so apply the last coat of polyurethane at least 4 days before the event.**
7. Boats may not be painted or marked with anything that can pollute the pool. Painted or marked boats will lead to disqualification. Cardboard that is already printed on is acceptable.

**Lab Report:**

In addition to constructing a boat that will travel the length of a pool, students are expected to conceptualize their building process.

**Lab Report will be due May 9th at 11:59pm. NO LATE SUBMISSIONS will be accepted.** Please submit Lab Report to this link: <https://forms.gle/JtnvyPsCwdRahF7E9>

Specifications:

- a. Follow the template provided.
  - i. [Google Doc Template](#)
  - ii. [Slide Deck Template](#)

**Lab Report Rubric**

Criteria	5 Excellent	4 Good	3 Average	2 Below Average	1 Incomplete	0 Missing
<b>Purpose:</b> Team clearly identified the purpose of the competition and overall goal.						
<b>Design Process:</b> Team covered all areas of the design process. Team clearly explained the brainstorming process of project, included STEM concepts, and calculations of the theoretical boat's displacement.	10 pts					
<b>Challenges:</b> Team stated challenges they faced while building their boat and provided clarity on the steps they took to resolve each challenge.						
<b>Hypothesis:</b> Based on their design, team came to a final conclusion on the success of their boat.						
<b>Conclusion:</b> Team shared their final thoughts on project and what they learned in the process.						
<b>Total</b>	_____/30					

**Judging:**

1. Each boat will have one opportunity to race.
2. 2 team members must be on the boat to participate in the race.
3. Each team will have 1 minute to stabilize their boat in the water.
4. Once the team members of all teams are safely secured in the boats or the stabilization time has elapsed, the race will begin at the judge's announcement.
5. The back of the competing boats will be lined up against the pool wall to ensure a fair start.
6. Timing will cease once the boat touches the finishing side of the pool.
7. The distance between the starting location, where all lead bodies in the boat are lined up, and the finish line will be the same for all teams.
8. Boats that capsized, sink, or fail to travel the entire length of the pool will not have a recorded time.
9. The competition will be judged by the boat's performance in the pool and a Lab Report due prior to competition. (See attachment for specifications)
10. Lab Scoring: For EVERY FIVE points received on the lab report .5 seconds will be taken off the final heat time.
  - a. Ex. lab report score 30 and Heat Time 28 seconds. Total amount of 25 seconds for the final time.



## **Awards:**

### **Judge's Choice Award** (1 winning team)

Awarded by the judges based on creativity, showmanship and team spirit. Costumes and props are encouraged!

### **Overall**

Medals will be given for 1st, 2nd, and 3rd place teams with the best race time (including Lab Report time deduction)

### **Day of Competition Rules:**

- Competition will be held at Central High's Pool on **May 14th for High School and May 15th for Middle School**

For more Information:

View Cardboard Boat Presentation

[Click Here](#)