



The Aggie Crane Challenge

2012 TAME State Math and Science Competition - College Station, TX

DESIGN TEAM CHALLENGE JUDGES

The timetable for this event is as follows: (times are approximate and may change)

- 12:30 pm Teams move into Team Design Challenge area and instructions are given. Students may not read instructions or touch supplies until instructed to do so.
- 12:45 pm The announcement is made for teams to begin. They have 45 minutes in total to complete the design, building and testing phases.
- 1:30 pm (or 45 minutes from starting announcement)
Judging begins. **NO ADDITIONAL WORK OR TESTING CAN BE DONE AFTER THE ANNOUNCEMENT IS MADE TO STOP.** Please help us watch to make sure all teams stop working on their crane at this time.

During the design, building and testing phases:

Your job will be to walk around and be supportive, address materials problems, and give **no** advice! If any team is missing supplies, let Lauren, Linda or Marcus know immediately; otherwise, no additional items may be distributed.

You CAN:

- ♦ Make sure the team has filled in everything required on their Team Information and Documentation Form and that it is legible.
- ♦ Help direct any questions to Lauren, Linda or Marcus.

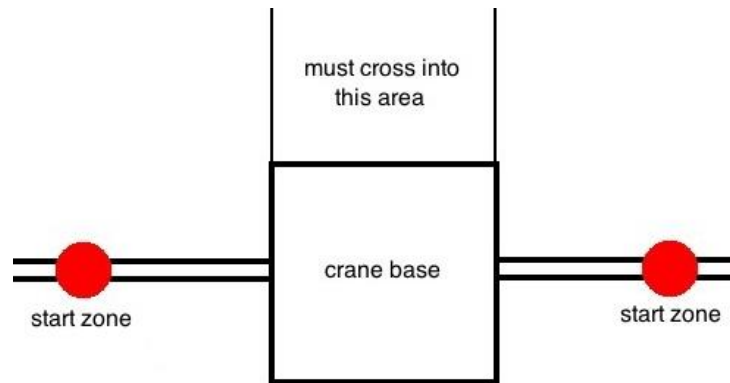
During the judging phase:

Two judges will work together. You will move to the table where the team constructed their crane.

Judging will consist of four phases:

1. Check to make sure the model follows all rules. Any violation of the rules, including use of improper materials, is an automatic disqualification. Please notify Lauren or Marcus if this occurs.
2. 90° Pivot Testing:
 - Have the students place two testing marbles in the bucket of the crane.
 - Students may touch the take-up reel and pivot control of the crane to demonstrate the pivot.
 - The bucket of the crane must remain off the table for the entirety of pivot testing. Beyond that, students may choose any height that they would like for the bucket.
 - Mark “yes” or “no” on the judging sheet to indicate whether or not the crane executed the pivot properly. The entire cup must cross the boundary line into the zone indicated on the table top.

- The graphic below indicates the two possible start zones and appropriate end location of the 90° pivot.
- This metric is an all or nothing score, so any rotation that does not move fully from one of the start zones to the designated end location will result in a “no” on the score sheet and there are no extra points given for additional rotation, only a “yes” on the score sheet if it pivots properly.



3. Height Testing:

- Have the students use the take-up reel to lower the crane bucket to the table.
- Check that there are still two testing marbles in the bucket of the crane.
- Students may touch only the take-up reel to demonstrate crane height.
- Have them move the bucket to the highest point possible.
- Measure from the table to the bottom of the cup in inches. Record the height on the judging sheet.

4. Maximum Load Testing:

- Have the students use the take-up reel to lower the crane to within one inch of half of the maximum height and lock the mechanism, if possible.
- From this point on, students may not touch the crane.
- Gently drop marbles to the crane bucket, one at a time, until the crane breaks or the crane bucket touches the table.
- When one of these two things happens, count the number of marbles in the bucket at the time of failure. Record this number on the judging sheet.

If the crane collapses during any phase of the testing, no further judging is to be done. Make a note of this on the score sheet and put a zero in any remaining areas to be completed on the scoring sheet.

Once you have judged a project, place a green “JUDGED” sticker on the board near the crane base.

Take the Team Information and Documentation Form with you and place it directly behind the Scoring Sheet. Make sure that both forms have the correct team number on them. Move on to the next project in your area that has not been judged.

After all the projects have been tested, turn in your judging sheets to **Lauren, Linda, Savita or Marcus**. The TAME staff will collate data and identify the winners.