

# RAMP RACE COMPETITION

Civil Engineering, Construction Science and Management, Industrial Engineering

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## Prizes

1<sup>st</sup> Place: \$500

2<sup>nd</sup> Place: \$200

3<sup>rd</sup> Place: \$100

(Scholarships will be provided by the College of Engineering)



## PROBLEM STATEMENT

You are an engineer for KSU Toys. Your manager comes to you asking you to design a ramp as an accessory for a toy car already on the market. You have to design a ramp that will send the car two feet past the end of the ramp without an external push. You also have a budget of \$15 to work within. Once you have designed the ramp, you must follow your plans exactly to build and test the ramp.



## Time

25 minutes to sketch a design and order materials  
35 minutes to build, test, and perform calculations

## Materials

All materials will be provided.

- ◆ wood
- ◆ cardstock
- ◆ cardboard
- ◆ blocks
- ◆ cardboard box
- ◆ books
- ◆ race car

## EQUATIONS

$$\bar{X} = \frac{\sum X}{N}$$

$$S = \sqrt{\frac{\sum_{k=1}^n (x_k - \bar{x})^2}{n-1}}$$

## Rules

1. 4 people per team
2. Each team must create a dimensioned sketch that must be followed by your other teammates.
3. Less than half your team will draw and the remaining teammates will build.
4. Each team must order all materials within budget.
5. Ramp must remain standing through a minimum of five runs.  
Note: If ramp does not remain standing your team is disqualified.
6. Calculations must be completed of the mean and standard deviation for your cars distance traveled using the equations provided.
7. All must be completed within the one hour time period.

## Judging Criteria

1. Compliance with all rules listed above.
2. Team with the lowest cost wins.
3. In the case of a tie in lowest cost, the team with the smallest standard deviation wins.