Maryland Engineering Challenges™
2011
Theme Park Guide

Supported By:

PB Americas, Inc.

Mueller Associates

Level:

Elementary School—Grades 4 to 5
Grade 4 and grade 5 teams may be judged together at the competition, depending on the number of teams that register. Information will be emailed to the Coaches of registered teams after the report due date.

Important Dates:

Coaches' Information Session
Thursday, November 11, 2010
4:00 pm – 7:00 pm

Registration Deadline and Written Report Due
Friday, March 11, 2011
4:00 p.m.

Competition Date
Saturday, March 26, 2011
9:00 a.m. – 3:00 p.m.

All Storybook Theme Park activities will be held at:
Baltimore Museum of Industry, 1415 Key Highway, Baltimore MD 21230

For information about engineering requirements, contact:
Grade 4 – Robert Eckhaus at robert.eckhaus@us.army.mil OR Gary Johnson at gjohnson129@comcast.net.
Grade 5 – Jerry Jannetti at jannetti@pbworld.com.

For registration information or general questions about the Maryland Engineering Challenges, contact Melinda Cané at mcane@thebmi.org Detailed information about the competition event will be sent to Coaches after the registration deadline.

To register a team, adult Coaches should go to http://tp1.clearlearning.com/hshealey/EC.tp4 Please note there is a $5 PER COACH registration fee. Only one Coach is needed per team, although a team may have as many adult helpers as needed.

Written reports must be submitted AS HARD COPIES, either by mail or in person, to:
James Keffer, BMI, 1415 Key Highway, Baltimore MD 21230

The Challenge:

Based on an assigned literature curriculum reading, design and develop a model ride for a theme park. The ride will carry at least four persons at a time and will be constructed around the theme of a storybook you have enjoyed reading.

Engineering Team Requirement:

There is no minimum or maximum team size; however, a recommended size is 2 to 4 students.

Design & Construction Standards:

- The model must be constructed on a base no larger than 24 "x 24".
- It must have a vehicle that can carry at least four persons at a time. The vehicle can be propelled by any appropriate means, e.g., pulley, motor, fan, but may not be pushed directly by hand.
- Any suitable materials or tools may be used in the construction, but the emphasis should be placed on recycled materials and materials readily available in the classroom.

Performance Guidelines:

Each team will be assigned a set-up location. The model of the attraction may be displayed with a poster no larger than 24” x 18” that contains the following information:

- Team Name
- School Name
- Address of School & School System
- Teacher’s & Principal’s Name
- List of Team Members
- Parent / Community Helpers

Members of the team will provide a demonstration of the model working and explain how the model reflects the theme of the storybook that inspired it. All group members should participate in the demonstration or presentation. The presentation should be no longer than 2 to 3 minutes so that all teams will have time to be heard on the competition date.

The ride should be as automated as possible. The demonstration must show elements described in other sections of this Challenge description.

Evaluation Standards:

All elementary level competitions involve four main components: the design and construction of the project, a written report, an oral report, and the performance demonstration.

1. DESIGN & CONSTRUCTION — *Competition value: 25 points.*
2. WRITTEN REPORT — *Competition value: 25 points*
3. ORAL REPORT — *Competition value: 25 points*
   Each team will have 2 to 3 minutes for their oral presentation.
4. PERFORMANCE DEMONSTRATION — *Competition value: 25 points*

An outline of what is required for each of these components, and general guidance on preparing for the competition, is given in the "Elementary School Guide to Entry," which should be read in connection with this document.

GOOD LUCK TO YOUR TEAM!

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Theme Park Student Design Report

Team Name:

Team Members:

Team's School Name *(if applicable)*:

Adult Coach:

Other Adult Helpers:

HARD COPY of this written report due: Friday, March 11, 2011 by 4:00 p.m.
at the Baltimore Museum of Industry, 1415 Key Highway, Baltimore, MD 21230

Design Report Directions:
Make a copy of this booklet for each team. Team members should complete each part by clearly printing the requested information. Additional pages may be inserted as needed.
The information in this booklet must be the work of student team members.
Extra points will be awarded for the effort that is placed on making the report as formal and as detailed as possible.

What book or story is the basis for your Theme Park Ride?

Title:

Author:

Make a beginning design sketch of your Theme Park Ride.

Drawing Date: _____

List the dates of important milestones in your project and describe those milestones.

List the recycled materials used in constructing your project.

Materials: Cost: Tools Used:

Design Development Questions:

Explain how your Theme Park Ride design was selected.

Explain the improvements or changes made to your design after testing.

What problems did your team encounter in designing and constructing the drive mechanism for your ride? How were those problems resolved?

What science skills were needed in this challenge?

What math skills were needed in this challenge?

Resources:

List all the information resources used to solve the challenge problem. *Include books, pictures, and websites.*

Make a final design sketch of your Theme Park Ride.

Drawing Date: _____

Team Members:

Explain what help adults gave your team.

Name	Type of Assistance

We hereby certify that the majority of the ideas, design, and work was originated and performed by the students, with limited assistance by adults, as described above.

Signed by students and adult helpers:

Printed Name	**Signature**