Maryland Engineering Challenges
2018 Theme Park Challenge
Elementary Level – Grades 4 and 5

Engineer Contact:
Robert Eckhaus at s.r.eckhaus.civ@mail.mil

Important Dates

Coaches' Information Session

⇒ **Thursday, November 16, 2017 4:00 p.m. to 7:00 p.m.**

This "drop-in" event is designed for adults interested in coaching a team to stop by and chat with engineers. Find out if a particular Challenge is a good fit for your students. The Information Session is not required and there is no cost. Registration is strongly encouraged. Contact James at jkeffer@thebmi.org

Coaches' Information Session 2

⇒ **Saturday, January 27, 2018 10:00 a.m. to 2:00 p.m.**

Learn the practical aspects of this Challenge. Work with engineers to explore design and constructions aspects of the project. Especially helpful for first-time Coaches and/or those with little previous engineering knowledge. Registration required prior to 1/25/17. Contact James at jkeffer@thebmi.org

Registration Due

⇒ **February 23, 2018 Prior to 4:00 p.m.**

In order to be a registered team, each team must have their adult Coach do the following:

- Register online http://survey.constantcontact.com/survey/a07eekcihgzj7939g1n/start
- Specify grade for all students, and
- AND submit the team's Written Report as a HARD COPY to the Baltimore Museum of Industry
- AND pay a $5 Coach's Fee, details at https://48278.blackbaudhosting.com/48278/MEC-Coach-Fee

Written Report Due

⇒ **March 9, 2018 Prior to 4:00 p.m.**

Theme Park Competition

⇒ **March 24, 2018 Doors open at 9:00 a.m.**

Full details about the Challenge will be emailed to Coaches after the registration deadline.

Questions about Challenge specifications or judging should be sent to the Engineer Contacts:
Robert Eckhaus at s.r.eckhaus.civ@mail.mil

Other questions?
James Keffer jkeffer@thebmi.org

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.
- There is no limit to the number of teams a school may have.
- The Theme Park will have two Divisions: Theme Park I is for teams of fourth graders only. Theme Park II is for teams with all fifth graders OR for teams with a combination of fourth and fifth 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 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.

During the day of the challenge, each team will be assigned a set-up location. The model may be displayed with a poster no larger than 24” x 18” that contains the following information:
NOTE: A poster is not required.

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

EVALUATION

At the day of the challenge, members of the team will provide an oral report describing the Theme Park and a demonstration of how it works. The presentation CANNOT be longer than three minutes to ensure that all teams will have time to be heard on the competition date. Teams will be asked to stop after three minutes, please plan accordingly. The team can select one or two members to give the oral presentation, if needed, to meet the three minute maximum time. After the oral presentation, the judges will ask questions and team members will demonstrate the ride.

EVALUATION STANDARDS

This elementary school-level competition involves four main components: the design and construction of the project, a written report, an oral report, and the performance demonstration.

- DESIGN & CONSTRUCTION — Competition value: 25 points.
  See description above.

- WRITTEN REPORT — Competition value: 25 points
  Each TEAM MUST complete the "Student Design Report" according to the format at the end of this document. Each team must list all the team members and grade; and indicate if they are Theme Park I for grade 4 or Theme Park II for grade 5 or teams with a combination of grades 4 and 5.

- ORAL REPORT — Competition value: 25 points
  Each team will have 2 to 3 minutes for their oral presentation. Teams will be asked to stop after three minutes, please plan your presentation accordingly.

- PERFORMANCE DEMONSTRATION — Competition value: 25 points
  After the oral report, members of the team will provide a demonstration of the Theme Park and answer questions from the judges. All group members should participate in the demonstration. The performance demonstration also will not exceed three minutes.

GOOD LUCK TO YOUR TEAM!

STUDENT DESIGN REPORT

Team Name

We are (please check one):

Theme Park I — Grade 4 only ___

Theme Park II — Grade 5 only ___
OR a combination of Grade 4 and 5 students ___

Team Members and Grade

Team's School Name (if applicable) and County

Adult Coach

Coach's Email

DESIGN REPORT DIRECTIONS

Make a copy of the "Student Design Report" pages for each TEAM. Team members should complete each part by clearly printing (or typing) the requested information in the exact order and format. Additional pages may be inserted as needed. Be sure to include the first page titled "STUDENT DESIGN REPORT" and complete all information on this page. The information in this design report must be the work of student team members, as certified on the final page.

Extra points will be awarded for the effort that is placed on making the report as formal and as detailed as possible.
Written reports must be submitted, either by mail or in person, to:
BMI, 1415 Key Highway, Baltimore MD 21230, prior to 4:00 p.m. on March 9, 2018

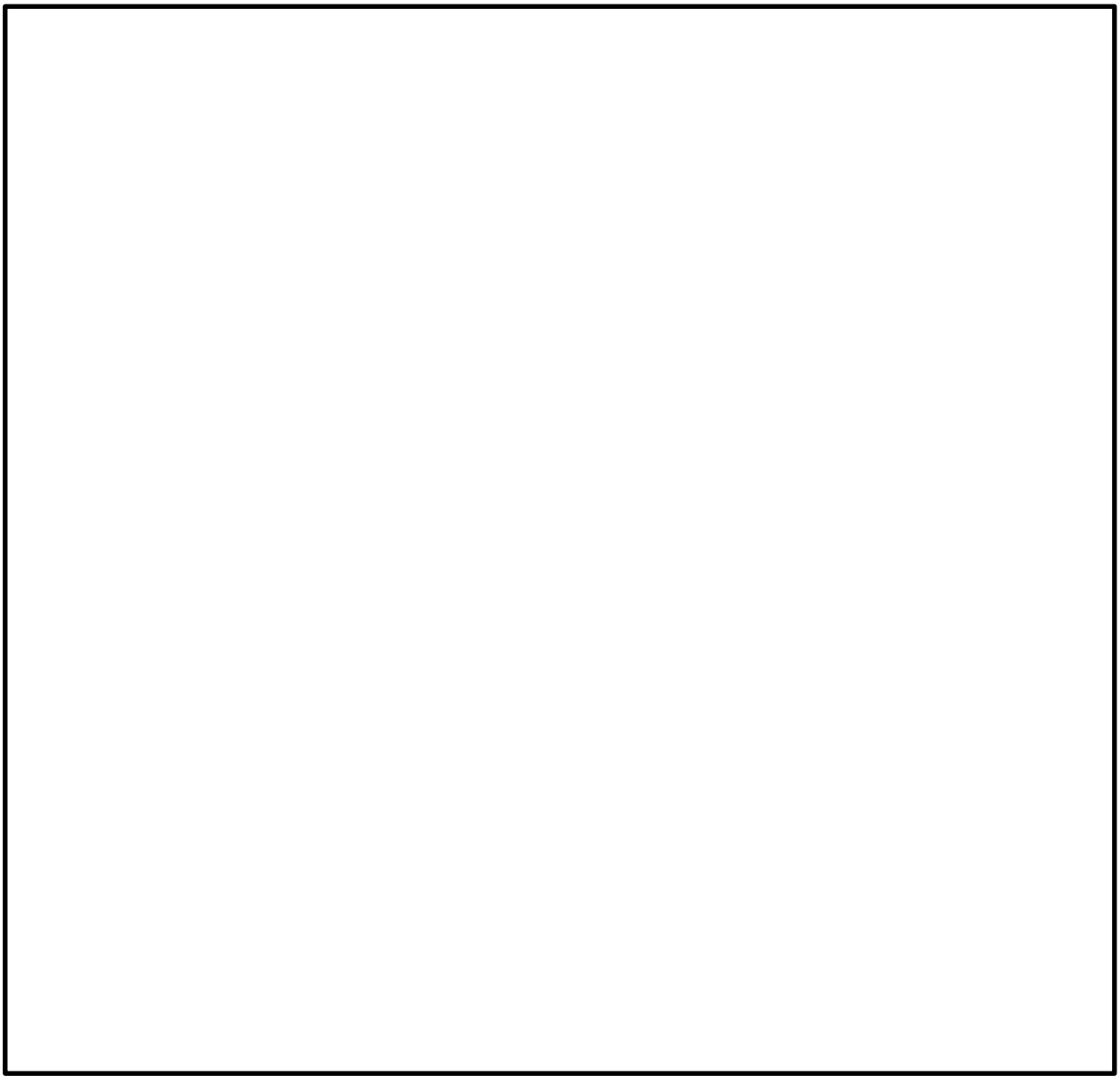
What book or story is the basis for your Theme Park Ride?

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.

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List the recycled materials used in constructing your project.

Materials	Cost	Tools Used

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Explain how your Theme Park Ride design was selected.

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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?

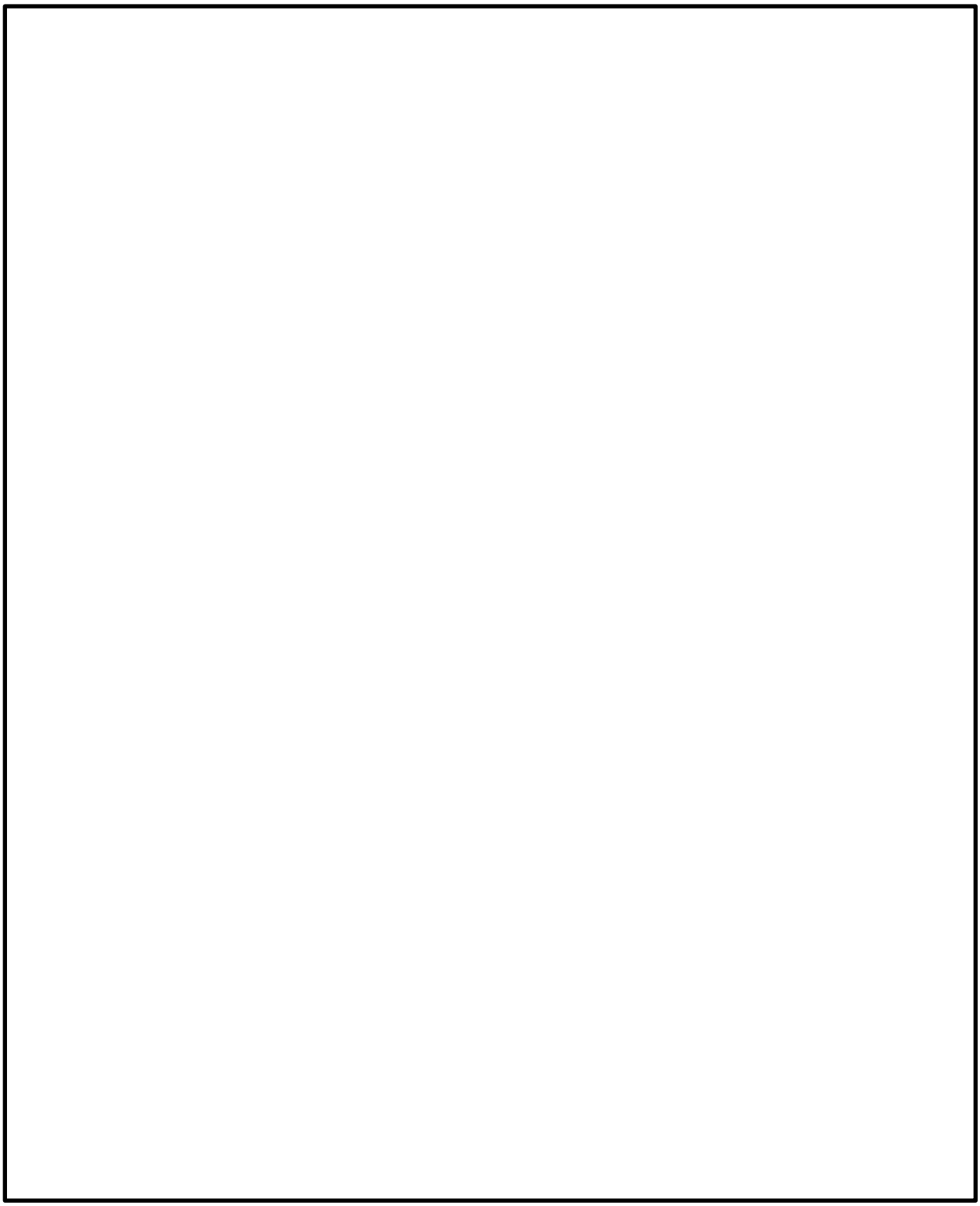
What science skills were needed in this challenge?

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 _____



Explain what help adults gave your team:

Name Type of Assistance

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TO BE SIGNED BY ALL STUDENTS, ADULT HELPERS, AND TEAM COACH.

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.

Grade Printed Name Signature Date

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