Magic Mountain Project Kit

Congratulations! You're going to Magic Mountain! Use these project ideas to enrich your educational experience in the park. Read through them before you go to make sure you understand the terms and concepts, and to help you determine if you want to expand upon any of them. You'll find fun facts and printable worksheets at the end of this packet.

a- elementary level activity b- middle school level activity c- high school level activity

Language Arts

Magic Mountain is full of fun things to do, but there is a lot that goes on behind the scenes. Informational reports are used by staff to detail the workings and conditions of the attractions in the park. Try your hand at writing a professional informational report on one of the attractions.

a. Pick an attraction to do your report on. Draw or write about three details about that attraction (height, color, etc) and whether or not you think it looks safe for guests based on the way it looks.
b. Choose one attraction to do your report on. Detail five specific details of the attraction, like estimated height, paint condition, queue condition, etc. Conclude your report with a recommendation for improvement.
c. Detail ten specific details of the attraction of your choice. Include guest experience ratings, safety ratings, queue management ratings, etc. Conclude your report with your approval and/or recommendations for improvements. Use appropriate letter format to present your report.

Materials required: Notebook, pen/pencil
Submission: A copy of your writings/drawing, and any pictures/videos

Teaching or learning notes:

Applied Math

Math is everywhere! Every single attraction at Magic Mountain was created using math. Take a look around and find examples of the math you know.

a. Identify and draw the shapes that you see and where you see them. See if you can find places where simple math equations were used. Document your findings.
b. Identify the math used to create one particular feature in the park. Outline the concepts and principles you see.
c. Identify the math used to create one particular feature in the park. Outline the concepts and principles, and use estimation to perform one of the calculations the builders would have used.

Materials required: Notebook, pen/pencil, calculator or smartphone (optional)
Submission: Your calculations, estimations, and conclusions, and any pictures/videos

Teaching or learning notes:

Science

Check out the physics of rollercoasters! All ride designs utilize the principles of Conservation of Energy, inertia, friction, potential and kinetic energy, and gravity. What makes the fast rides go fast? Why do rides slow down when they are going uphill? Why do you get flung from side to side around corners? What is inertia and what affect does it have on ride physics? How do rides use potential and kinetic energy to keep them going? How is energy “conserved” during the ride? What parts do friction and gravity play? What are Newton’s three laws of motion and can you see them working on the rides?

a. Discuss some of the simpler concepts and try feeling the forces at play on some rides. Compare rides to one another and talk about what goes into building them. Draw one of the rides.
b. Discuss the concepts and identify as many physics concepts as you can on some rides. Compare rides, and then pick one ride at the park to diagram/map and include the forces you can identify to define how that ride works.
c. Discuss the concepts, identify them on some rides, and diagram one of them including its use of physics. Design your own ride using the things you’ve learned.

Materials required: Notebook, pen/pencil
Submission: A copy of your drawings, diagrams, maps, or designs, and any pictures/videos

Teaching or learning notes:

Social Studies

There are a lot of people at Magic Mountain! How does an amusement park handle the crowds? What sorts of tools does it employ to manage people and prevent unsafe crowding conditions? What sorts of tools does the park use to limit the number of people who attend the park in a day? What types of attractions does the park utilize to help with crowd control? How do people respond to these tools? Do they notice? How many people do they need to employ to help manage their guests? What affect does the layout of the park have on the movement of people? Can you see these same principles in use in the planning of large cities or other social environments?

a. Notice how many people are in the park. Discuss some of the things Magic Mountain does to control crowding and help make each guest's experience pleasurable. Write down or draw the techniques you see and how often you see them being used.
b. Discuss crowd control pre-entrance, during guest stay, and around specific attractions. Analyze the layout of the park and if/why certain features were designed with the purpose of managing crowds.
c. Discuss crowd control and analyze the layout of the park. Discuss the things you've seen in light of larger social environments you've been in. How universal are these techniques? What are your ideas for improving guest experience at Magic Mountain?

Materials required: Notebook, pen/pencil
Submission: A copy of your writings/drawings, and any pictures/videos

Teaching or learning notes:

Fun Facts

- Goliath is considered a hypercoaster, which is a category of coasters that features a height or drop over 200 feet, lacks inverted elements, and uses a lift hill. This unique hypercoaster takes riders on a 3-minute adventure on 4,500 feet of track!

- In celebration of the new millennium, a gigantic wedding was hosted on February 14, 2000 for 2,000 people on Goliath. Two ministers performed the ceremony atop the 255-foot lift hill, and 1,000 couples exchanged their vows before taking the steep plunge downward.

- Originally, the park's theme had something to do with cute gnomes that lived in a Magic Mountain. After Six Flags came on the scene, it threw out the gnomes and created what it has dubbed the "Xtreme" park. With 19 thrill machines, Six Flags Magic Mountain now claims the world's largest arsenal of coasters!

- The SeaWorld folks, fresh from successfully developing their San Diego marine park, originally built Magic Mountain. After facing some huge problems, they sold the theme park soon after it opened. There are still cadences of the original whimsical theming here and there.

- Superman: The Escape climbs a 415-foot tower, reaches 100 mph, and subjects its riders to 6.5 seconds of weightlessness (all world records when the ride debuted).

- Full Throttle is the world's tallest, fastest launched looping roller coaster!

- The Revolution was the first looping coaster on the West Coast and was given landmark status. It is now called the New Revolution and has virtual reality elements!

- Samurai Summit, the home of Ninja, is usually the quietest and least crowded place in the park. It also has easy access to Superman, Tatsu, and Roaring Rapids… so if you want to take a quiet break, head up the Helpful Honda Express to the top of “Magic Mountain”.

Magic Mountain

1. Draw a picture of your favorite ride.

2. Describe your favorite ride and why you love it.

3. Which rollercoaster is the tallest? The fastest? The oldest?

4. Draw or describe one example of engineering you saw.

5. Draw a simple replica of the park map including some labels.

6. What is inertia and when do you experience it?

BONUS:

Explain how an engineer uses math to design and build a rollercoaster. What kind of math do they use? Why is it important that they are accurate?