

The website linked to this document is no longer available. Please reference version 2.1.

2020 Suggested E-Portfolio Research Documents

Amusement Park Physics

Answer the following questions based on their relationship to the amusement park ride. Click on the blue hyperlinks to open the presentation. Mentors may have to assist students with some of the terms presented.

[Video: Axis Prototype](#)

Roller Coasters: How do they work?

- What is potential energy?
- What is kinetic energy?
- What are running wheels?
- What are friction wheels?
- What are compressed air brakes?
- Explain the difference between wooden coasters and steel coasters?

[Video: History of Roller Coasters](#)

Roller Coasters: How did coasters come to be?

- In the 1600's, what were the forerunners to roller coasters?
- Where did America's amusement park history begin.
- When was the gravity switchback train introduced?
- Who designed the first ender friction roller coaster?
- When was Matterhorn introduced?
- How tall is Magic Mountain?

[Video: How Do Bumper Cars Work](#)

[Bumper Cars: How do they work?](#)

- Explain Newton's 3rd Law of Motion.
- What stops the force of the collision?
- What power source does bumper cars use?
- What happens to the driver when bumper cars collide?
- Why is it important to wear seat belts?

[Pendulum Rides: How do they work?](#)

- How would you compare a pendulum ride to a swing?
- What is g-force?
- Why do riders feel high g-forces on pendulum rides?
- What is centripetal force?

Activity:

[Trebuchet Challenge](#)

Now that you have a better understanding of physics try this fun game. Each time you try this challenge you will be able to incorporate new facts that you have learned.

Distance Challenge: The object being thrown must not exceed 650 feet.

- Which of the 6 variables did you change to maximize your score? Why?

Accuracy Challenge: The object being thrown must land in the target zone.

- Which of the 6 variables did you change to maximize your score? Why?