FELIPE THE MECHANICAL ENGINEER

PHYSICS PHANTASY

Hi engineers! My name is Felipe and I am a mechanical engineer! When I was in fifth grade, I would help my dad fix cars on the weekends. I loved learning about how engines work and knew I wanted to learn more! I went to Cal Poly to study mechanical engineering. I was the first one in my family to go to college!

Physics is the study of how objects in our universe interact with each other. Physics explains the effect of invisible forces, such as gravity, on objects! Mechanical engineers design and create things that we use every day, such refrigerators and elevators. It is very important that mechanical engineers understand physics so they can understand how forces will act on the objects they design.

My most recent project was to build a roller coaster for the new theme park, Physics Phantasy, that explains the different types of energy in our world! After planning, calculating, and constructing, the roller coaster is finally ready to ride! I need your team's help to be the very first testers of the brand new Riding Energy Roller Coaster! A world of energy is waiting, let's get started!

FELIPE THE PHYSICIST

PHYSICS PHANTASY

Hello, team! It looks like we need a launch code which is a secret message to start the roller coaster. This is actually an RGB (Red Green Blue) color value. Your team needs to write code which will **set all of my lights to be red 215 green 244 and blue 66**. Then **move our cart forward a distance of 15 at speed 35** so we can start the ride!

FELIPE THE PHYSICIST

PHYSICS PHANTASY

Awesome job getting the Riding Energy Roller Coaster started! We are getting excited about this roller coaster. Let's **animate a wiggle repeated 2 times** and **move our cart forward a distance of 10 at speed 40.** Now it's time to learn about potential energy as we climb up the first big drop!

FELIPE THE PHYSICIST

PHYSICS PHANTASY

Potential energy is the stored energy an object has because of its position or state. As we climb to the top of our drop, we are gaining potential energy because we are increasing our position, or distance, from the ground. It's time to code our pathway up the incline! Write code so that our cart will **wait until your team claps**, then **turn 45 degrees** and **move our cart a distance of 30 at speed 35**. Once we are at the top of the drop, **animate a forward spin** so I can look at how high up we are!

FELIPE THE PHYSICIST

PHYSICS PHANTASY

We made it to the top of the roller coaster thanks to potential energy and you! Let's get excited about being this high up with a **Woohoo expression**! Let's look down at the drop by **tilting the head to -13 degrees.** Then, **turn the head to 90 degrees** and **turn the head to -90 degrees.** Look back up by **tilting the head to 15 degrees** and **turn the head to 15 degrees.** Now it's time to let kinetic energy do all of the work as we speed down the drop!

FELIPE THE PHYSICIST

PHYSICS PHANTASY

You can think of kinetic energy as potential energy in action! Kinetic energy is the energy an object has due to its motion. As our velocity increases down this drop, so will our kinetic energy. And all of the potential energy we had stored up will decrease as our position from the ground decreases. Write code which will **turn our cart 90 degrees, move a distance of 15 at speed 80,** complete one **Forward Spin, turn to a -90 degree angle, move a distance of 10 at speed 60**, complete the second **Forward Spin, turn to a -45 degree angle**, complete the last **Forward Spin** of the track and celebrate with a **Woohoo expression**!

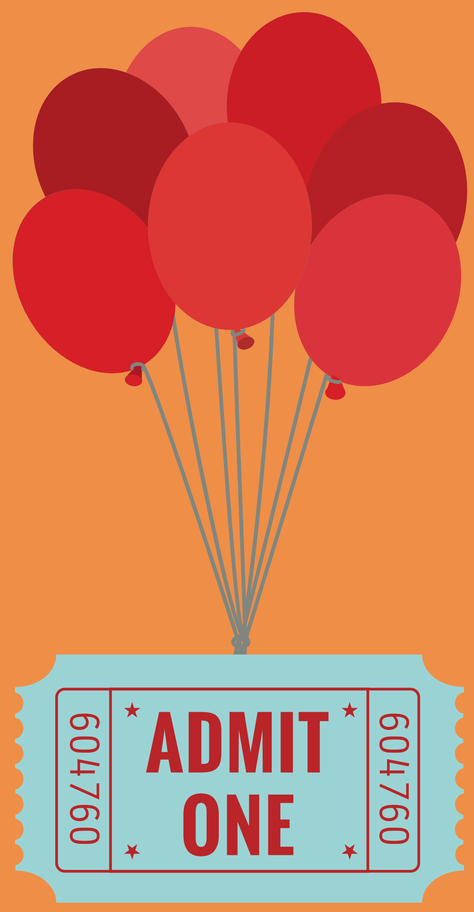
FELIPE THE PHYSICIST

PHYSICS PHANTASY

What an exciting roller coaster! Thanks for all your help with testing the Riding Energy Roller Coaster for the very first time! I couldn't have asked for a better team to work with! Remember, always pay attention to the world around you, be curious, and ALWAYS ask questions! Maybe next time we meet, we'll be testing a roller coaster that you created!

FINISH

PHYSICS FANTASY COASTER



START