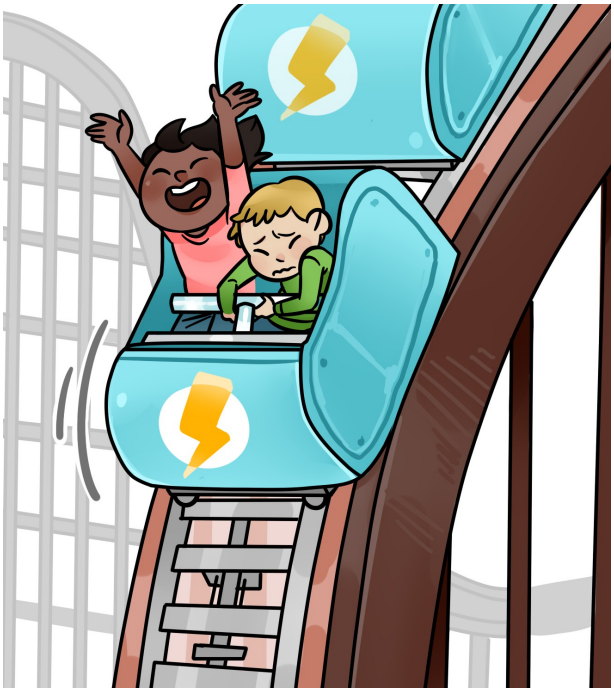
Name: _____

Roller Coaster Thrills

by Lydia Lukidis



You're cranking up the roller coaster, ever so slowly. Time seems to stand still. Your heart races faster and faster. Your palms start sweating. Here comes the big drop…

Ahhhhhhhhhhhhhhhhhhhhh!

Most of you have been on roller coasters. But have you ever wondered how they work? Actually, roller coasters demonstrate several basic laws of physics. In fact, a lot of things like gravity and magnets can also be explained by physics.

So let's get back to roller coasters. Guess what? They don't have engines! Surprised? You know that most vehicles like cars, trucks and airplanes have an engine. So how does a roller coaster move without one? To begin, a motorized chain pulls the cars to the top of the hill. After that, the cars move by themselves. I'm sure you all know what gravity is. It's the force that pulls you down to the Earth. The same goes for the roller coaster. Once it reaches the top of the hill, it gets pulled down by gravity.

This part is simple enough. But how does the roller coaster continue moving? After it falls, its potential energy gets turned into kinetic energy. These may sound like big words but it's really quite simple.

When a roller coaster sits on top of a hill, it has potential energy, or stored energy. This potential energy changes to kinetic energy when it goes down the hill. Kinetic energy is energy in motion. It allows the roller coaster to keep moving until the end of the ride. This motion produces a force called momentum. Momentum allows the cars to stay firmly on the rails and go upside down without stopping or falling.

It takes a lot of careful planning to design a roller coaster. Engineers who build them have to know all about the laws of physics in order to build safe, exciting, and powerful roller coasters. A roller coaster is really a major science project! The next time you are at the amusement park, head over to the long line for the roller coaster. Riding the roller coaster might become your new favorite physics lesson!

About the Author

Lydia Lukidis is a published children's author with a multidisciplinary background that spans the fields of literature, theater and puppetry.

Lydia's picture book, *Gerbs in the House: The Dilly Dally Bedtime Routine*, is now available. Find out if Mocha will ever get his silly son to sleep!

Lukidis, Lydia. *Gerbs in the House: The Dilly Dally Bedtime Routine* ISBN: 978-0-9917402-7-7

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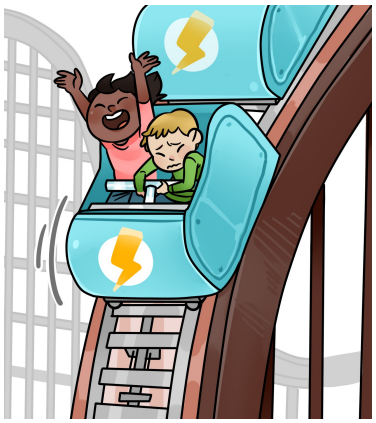

1. According to the reading passage, a roller coaster makes its long climb to the top of the first hill with the help of what?

a. gravity **b.** momentum
c. an engine **d.** a motorized chain

2. Based on the information in the reading passage, describe the difference between the *potential energy* and *kinetic energy* of roller coasters. Use complete sentences.

_____

_____

_____

3. Fill in the blanks to describe how a roller coaster works.

"_____ is the force that pulls a roller coaster down to Earth from the top of a hill. _____ is the force that allows the roller coaster to stay on the rails and go upside down without stopping or falling."

4. Engineers who build roller coasters need to know about what subject?

a. biology **b.** chemistry **c.** physics **d.** earth science

Name: _____

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Match each vocabulary word from the article with the correct definition.

_____ **1.** momentum

_____ **2.** engine

_____ **3.** potential energy

_____ **4.** gravity

_____ **5.** kinetic energy

_____ **6.** physics

a. a form of energy that has been built up or stored

b. a form of energy that is in motion

c. a force that keeps something moving

d. the branch of science that studies matter and motion

e. a machine that turns power into motion

f. a force that pulls an object down to Earth

Name: _____

Roller Coaster Thrills

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In the reading passage, "Roller Coaster Thrills," you learned about roller coasters and the basic laws of physics that make them work.

On the lines below, describe your favorite amusement park ride. Why is it your favorite ride? Be sure to use complete sentences.

ANSWER KEY

Roller Coaster Thrills

by Lydia Lukidis

1. According to the reading passage, a roller coaster makes its long climb to the top of the first hill with the help of what?

a. gravity **b.** momentum
c. an engine **d. a motorized chain**

2. Based on the information in the reading passage, describe the difference between the *potential energy* and *kinetic energy* of roller coasters. Use complete sentences.

Potential energy is the roller coaster's stored energy. Kinetic energy is the energy that creates movement and helps the roller coaster stay in motion.

3. Fill in the blanks in the following description of how a roller coaster works.

"**Gravity** *is the force that pulls a roller coaster down to Earth from the top of a hill.* ***Momentum*** *is the force that allows the roller coaster to stay on the rails and go upside down without stopping or falling."*

4. Engineers who build roller coasters need to know about what subject?

a. biology **b.** chemistry **c. physics** **d.** earth science

ANSWER KEY

Roller Coaster Thrills

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Match each vocabulary word from the article with the correct definition.

c.	**1.** momentum	**a.**	a form of energy that has been built up or stored
e.	**2.** engine	**b.**	a form of energy that is in motion
a.	**3.** potential energy	**c.**	a force that keeps something moving
f.	**4.** gravity	**d.**	the branch of science that studies matter and motion
b.	**5.** kinetic energy	**e.**	a machine that turns power into motion
d.	**6.** physics	**f.**	a force that pulls an object down to Earth