

## THE MIDW AY \& GAMES GRADEBSTEM

A RIDE THROUGH NEWTON'S LAWS

## TEACHER



AI though the Texas Star Ferris Wheel is an iconic part of the State Fair of Texas, the Midway is also home to many other more action-packed thrill rides These rides use rapid acceleration, speed, dips, and quick direction changes to create an exciting experience for brave Fair patrons. Explore how all of these thrilling components are examples of Newton's law of motion! Are you brave enough?

## A Ride Through Newton's Laws Rotter Coaster Movement on the Midway

In this lesson students will: * * Apply Newton's laws of motion while examining Midway
rides. * Note the difference between speed, velocity, and \& B acceleration in the Midway rides.

* Create their own unique fair ride that incorporates at least two laws of motion.
* Use data from a graph to determine the rate of change or slope in a real-world situation.
* Use integers to describe the direction of movement of a
roller coaster.



## Before You Go

Class Discussion about Newton's Laws of Motion * Watch this video that covers speed, acceleration, force, inertia, velocity and motion.

* Watch this video about action-reaction. * Take notes and discuss with a partner, and share your thoughts with the class.


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# A Ride Through Newton's Laws Roller Coaster Movement on the Midway 

## Integers

Integers, such as negative numbers, can be used to describe a variety of situations.

* Integers can be used to describe direction.
* If an object is moving forward, the distance may be described with a positive integer, and when moving in the opposite direction, the distance may be described with a negative integer.
* At the Fair, several rides are using kinetic energy to move in many different directions.
* Watch this video of the Windstorm Roller Coaster in action, and sketch the movement of the roller coaster on a height vs. time graph.


## Plan Your Route.

* Start at the Texas Star, and walk toward the Windstorm Roller Coaster.


## Optional Materials

to Bring

* Smart Phone or Tablet
* Notes from Class (or photo of notes)
* Pencil \& Notepad or Sketchbook

| :- Roller Coaster Stats |  |
| :--- | :--- |
| Drop: 30 feet | Height: 53 feet |
| Length: 1,430 feet | Trains: $2-12$ passenger |
| Top Speed: 40 mph | Train Mfg: SDC |

Windstorm Roller Coaster statistics
Taken from http://www.ultimaterollercoaster.com/coasters/windstorm_oldtown

* What unit of length is used to describe the distance traveled on the ride?
* What other rides at the State Fair move in such a way that their movement could be described with positive and negative integers?


## * Stopwatch (or you can use

 that function on your smartphone)

## While You're There

The objective of your visit is to find examples of speed, acceleration, force, velocity, and action-reaction at the Midway roller coasters. Watch or ride the roller coasters to discover how Newton's laws of motion are in action today!

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