

Activity 1 The Wheels on the Bus (elementary level)

Introduction

People travel in a variety of vehicles. Do you recognize them?

Overview

Can you spot as many types of vehicles as possible on your way to Michigan's Adventure?

Learning objectives

Observing, drawing, writing.

Materials you will need

Paper, pencil, crayons.

Instructions

1. On your way to Michigan's Adventure, observe as many different types of vehicles as possible.
2. Write down their names (car, bus, train, etc.).
3. Draw a picture of your favorite vehicle.
4. Beside each vehicle write down two descriptions of it (fast, slow, big, black, etc.).

Explanation

Different vehicles are used for different reasons. For example, busses can carry a lot of people; motorcycles can go quickly through traffic.

Extracurricular activities

- Think of a song about any type of vehicle.
- Write a poem about your school bus.
- Imagine you are a school bus; write about your day.

Activity 2 The Best Attraction in the World (elementary level)

Introduction

Every attraction is different. Can you draw the best attraction in the world?

Overview

What would make the best attraction in the world? Would it be the biggest?
Would it be the fastest? Would it be the wettest, or the most frightening?
Would it be the most fun?

Learning objectives

Observing, writing, visual art, measuring, creative thinking.

Materials you will need.

Drawing paper, art supplies, a good imagination.

Instructions

1. Observe the rides at Michigan's Adventure.
2. Make a list of the things that most appeal to you (going up & down, going round in a circle, getting wet).
3. Design your ideal ride including all those features. Is it safe?
4. Using the art materials illustrate your ride.
5. Describe your rides and its features.
6. How would you feel riding this ride?
7. What would you call your ride?

Explanations

All amusement facilities talk to the public about what they like and do not like about rides. They then use this information to help design better rides.

Extracurricular activities

- Make a 3-D model of your ride.
- Use personification to let the ride tell its life story.
- What song would you play on your ride?

Activity 3 Room for One More (elementary level)

Introduction

Michigan's Adventure has 34 rides. Each ride holds a different number of passengers.

Overview

The capacity of a ride is the number of guests who can ride a ride at one time. Using repeated addition or multiplication, determine the ride capacity.

Learning objectives

Number concepts, data collection, writing, reading.

Materials you will need.

Data table, paper, pencil.

Instructions

Use the data table to collect information about these rides.

Explanations

Knowing how many people ride our rides at any time is very important information for Michigan's Adventure. It can help us plan our staffing levels.

Data Collection

Ride	Number of vehicles	Maximum guests in cars	Total guests per ride
Giant Gondola Wheel			
Mad Mouse			
Zach's Zoomer			
Airplanes			
Scrambler			
Winky the Whale			

Extracurricular activities

- Which rides can hold the most guests in one turn?
- Why do you think Michigan's Adventure limits the number of guests on its rides?
- Graph your information.

Activity 4 Soaking up Fun (elementary level)

Introduction

Riding on a water slide is fun. How much water do you soak up as you travel?

Overview

Ride on a water slide and determine how much you soak up.

Learning objectives

Critical thinking, math, problem solving.

Materials

Sponges, measuring cups (1/4 pint, 1/2 pint, pint, quart, etc,), swimsuit.

Instructions

1. Take a sponge with you and ride down Snake Pit.
2. Squeeze sponge into measuring cups.
3. How many sponges does it take to fill 1 cup, 2 cups, etc?
4. If it takes X sponges to fill 1/4 pint cup, how many does it take to fill the 1 quart cup?
5. What happens if you use a bigger sponge? Do you get more water or the same?

Extracurricular activities

- How much water does your swimsuit soak up?
- How could you measure this?
- If everybody on the water slide is soaking up water, why does the water not disappear?

Activity 5 Roller Coaster Riding and Recording (elementary level)

Introduction

Shivering Timbers is 5384 feet long. Its tallest hill is 125' and it reaches speeds up to 65 MPH. A ride on Shivering Timbers takes an average of 150 seconds to complete. It is one of the most thrilling rides at Michigan's Adventure.

Explanation

While riding on a roller coaster you will feel different forces acting on you. What are these forces and where do they come from?

Learning objectives

Measuring, observing, data collection, critical thinking, creative thinking.

Materials you will need

Paper, pen, strong stomach!

Instructions: Record the following information below.

6. Ride the roller coaster and record how you feel on each part of the journey.
7. Record when you were traveling the fastest and the slowest.
8. Record when you felt the heaviest and the lightest.
9. Record how long the journey took.

Explanation

Roller coasters work because of two things: gravity and the transfer of energy. A motor pulls the roller coaster train to the top of the hill. Thereafter gravity “pulls” the trains downhill. At the top of the hill the roller coaster train is said to have “potential energy” or energy that is stored. As the train falls, this is converted into “kinetic” energy, which is energy that is being used. In physics you cannot lose energy: it is simply converted into another form. Throughout the length of the ride as it goes up and down hills and around corners the energy in the roller coaster is continually changing. There is enough energy stored in the roller coaster at the top of the first hill to take it to the end of the ride. In fact, there is more than enough energy: the roller coaster has brakes to stop it at the end of its run!

The further down the hill you go, the more kinetic energy you get, and the faster you travel. The ride goes fastest at the bottom. As you climb the next hill it loses this kinetic energy and gains potential energy: the ride is slowest at the top.

Data Collection

Part of Journey	How did you feel?	Mark with a X where you traveled the Fastest. Mark with a Y where you traveled the Slowest.	Mark with a H where you felt the Heaviest. Mark with a L where you felt the Lightest.
Lift Hill			
2 nd Hill			
Turn ½ point			
Trick Track			
Speed Bumps			
Helix			

Length of Time it took to Ride: _____

Extracurricular activities

- What happens to the stored energy at the end of the ride?
- Design your own roller coaster. Where would you put the biggest hill and the smallest hill?
- Use art materials to make a color drawing of your roller coaster.
- Give your roller coaster a name and design an advertisement for it.
- What music would you play on your roller coaster?

Activity 6 Get in Shape (elementary level)

Introduction

There are two kinds of shapes: geometric and free-form. Basic geometric shapes are the circle, rectangle, triangle, oval, pentagon, hexagon, parallelogram, etc. Free form shapes are uneven and irregular. They may be curved or angled or both.

Overview

Shapes are everywhere in the park. Can you find them?

Learning objectives

Observing, visualizing, drawing, production.

Materials you will need.

Notebook, drawing paper, art materials.

Instructions

1. Walk through the facility and identify as many shapes as you can find. Make a small sketch of each shape.
2. Choose your favorite ride. Focus on a section of this ride and draw that section very carefully. How many shapes did you draw?

Explanation

Everything we see is made up of a series of shapes. Shapes fit together to form patterns that we can use in design and building.

Extracurricular activities

- Draw a face using only geometric shapes.
- Look at one of your pictures at home, how many different types of shapes can you see?

Activity 7 Pulse Rate Performance (elementary level)

Introduction

Your pulse is the regular throbbing in your arteries caused by contractions of the heart. To calculate your pulse rate, place your fingertips on the carotid artery of your neck and count the number of pulses in 60 seconds (or the number of pulses in 15 seconds and multiply by 4).

Overview

When you get excited your heart rate increases. When you ride an exciting ride your heart rate should increase. Are our rides exciting? How can you tell?

Learning objectives

Number concepts, quantifying, data collection, critical thinking.

Materials you will need.

Worksheet, pencil, stopwatch.

Instructions

1. Choose as many of the rides listed on the worksheet as you are tall enough to ride.
2. For each ride you choose, take your pulse before you board the ride, record on the worksheet.
3. Time the length of the ride in minutes and seconds, record on worksheet.
4. Take your pulse right after you exit from the ride and record on the worksheet.
5. Rate how much fun you thought the ride was on a scale 1 = no fun, 10 = great fun.

Explanation

As we become excited, our muscles can tighten and flex. We need to breathe more to take in more air. This makes our heart beat faster. The more exciting the ride is the more this will happen and the faster our heart will beat.

Data Collection

Ride	Pulse Rate Before Ride	Pulse Rate After Ride	Fun Factor Rate 1-10	Length of Ride
Carousel	_____	_____	_____	_____
Frog Hopper	_____	_____	_____	_____
Tilt-a-Whirl	_____	_____	_____	_____
Cyclone Zone (water slide)	_____	_____	_____	_____
Shivering Timbers	_____	_____	_____	_____

Extracurricular activities

- Draw a graph of final pulse rate and how fun the ride was.
- Draw a graph of final pulse rate and length of a ride.
- Why do you think people close their eyes on a thrill ride?
- Why do you think people often scream on a thrill ride?

Activity 8 Wild Wet and Wacky (elementary level)

Introduction

Rides which use water are fun, and full of science.

Overview

Why does a small stone sink while a huge aircraft carrier can float? Ride Logger's Run and find out.

Learning objectives

Observing, buoyancy, friction, critical thinking.

Materials you will need.

Paper, pencil.

Instructions

8. Ride on the Logger's Run.
9. Record what happens when you hit the bottom.
10. Watch others on the flume. Which boats make the biggest splash?

Explanations

The splash is caused by a force called "buoyancy." Buoyancy is the force exerted on an object by the fluid in which it is immersed. When an object is placed in water (or any fluid) it will displace its own volume in water. As long as the weight of water displaced is greater than the weight of the boat, the boat will float. The more mass in the boat the more water will be displaced and the greater the splash.

Extracurricular activities

- Who first discovered this principle? What did he say when he discovered it?
- Design your own water ride.
- Give your ride a name and draw a poster advertising it.

Activity 9 Bumper Car Buddies (elementary level)

Introduction

The only car crash you will actually enjoy being in! Bumper cars provide safe fun and a good way to learn how to drive on the freeway.

Overview

Bumper cars illustrate a number of key aspects of physics which are used everywhere from the space shuttle to pinball machines. Ride the Dodgem and feel these forces in action.

Learning objectives

Observing, mechanics, data collection, critical thinking.

Materials you will need.

Paper, pencil.

Instructions

1. Ride, and then observe your friends riding the Dodgem cars.
2. Record what happens during a rear end collision. What direction did the cars go in? What direction did the passengers go in?
3. Record what happens during a side collision. What direction did the cars go in? What direction did the passengers go in?
4. Record what happens when you bump into a car that is traveling toward you.
5. Record what happens when you bump into a car that is traveling away from you.

Data Collection

Type of Collision	Direction of Cars	Direction of Passengers
Rear end		
Side		
Car traveling towards you		
Car traveling away from you		