



GO LEARN

GO

Six Flags®

Fiesta



Texas®

SAN ANTONIO

OUTSIDE LEARNING LAB

HIGH SCHOOL WORKBOOK

To the Teacher:

The activities found in this workbook were written to focus on specific skills and interesting questions about the rides and other features throughout the park at Six Flags Fiesta Texas. Our activities incorporate social studies, art, language, math and science lessons appropriate for the high school grades.

We recommend that you take the time to carefully look at these activities to choose which ones are appropriate for your students. We have included information that would allow you or your students to develop additional activities or questions if you so desire. We believe that students should be given a reasonable set of well-defined lesson goals to accomplish at the park before your arrival.

We hope that you enjoy your day of fun
at Six Flags Fiesta Texas!

Math & Science

Destination: CRACKAXLE CANYON

Location: THE RATTLER

INTRODUCTION: This world-class wooden roller coaster is known for its rapid descents, fast aggressive corners, high speed, and sudden direction changes. Have you ever wondered who rides the roller coasters and why people love to ride these exciting rides? Let's investigate!

- **MISSION: COLLECTING, GRAPHING AND INTERPRETING DATA**

Observe the ride at least once as a group. What things did you notice about the ride? Gather data by selecting one of the following:

- A. Does the time vary from ride to ride? Time the ride from beginning to end five times. Do the times vary? Why or why not? Graph your results.*
- B. Tally the number of males vs. females during three ride cycles. Are there more males than females? Why or why not?*
- C. Tally the approximate age of the riders in two ride cycles (classifications should include: child, young adult, adult or older adult). What age group is most represented? Give possible reasons for your results.*

Math & Science

Destination: WATER RIDES Location: POWER SURGE & BUGS WHITE WATER RAPIDS

During much of the ride the boats are free floating. Describe how you could estimate the flow rate of the water and determine the time to circulate all the water in the ride once.

Describe what happens to you at the bottom of the hill when the boat splashes. What causes this?

Calculate the Potential Energy at the top of the hill.

$$PE = mgh$$

$$PE = \underline{\hspace{2cm}} \text{ J}$$

Calculate the velocity at the bottom of the hill, before the splash.

$$v = d / t$$

$$v = \underline{\hspace{2cm}} \text{ m/s}$$

Calculate the velocity at the bottom of the hill, after the splash.

$$v = d / t$$

$$v = \underline{\hspace{2cm}} \text{ m/s}$$

Time how long the splash lasts.

$$t = \underline{\hspace{2cm}} \text{ sec}$$

Calculate the force it takes to slow the boat during the splash. Use impulse.

$$Ft = m v$$

$$F = \underline{\hspace{2cm}} \text{ N}$$

Calculate the amount of work done on the boat while it is being slowed.

$$W = F d$$

$$W = \underline{\hspace{2cm}} \text{ J}$$

Math & Science

Destination: SPASSBURG

Location: DER PILGER BAHNHOF (THE TRAIN)

INTRODUCTION: The train makes a circuit around the park. It offers several opportunities for measurement and estimation. For example, can you estimate the average speed of the train, the number of passengers who can ride at one time, and the length of the track?

MISSION: MAKING MEASUREMENTS

- A. Estimate the length of the train engine and one of its passenger cars.

Engine: _____ m Passenger car: _____ m

- B. Estimate the length of the entire train and explain the method you used for your estimation.

Length of train: _____

- C. Estimate the number of people who can ride the train at one time and tell how you arrived at your estimation.

Number of people on train: _____

- D. Time the train ride from beginning to end. Also time any stops the train makes during a complete circuit.

Time for one complete circuit: _____ min.

Actual time the train is moving: _____ min.

- E. Describe the motion of the train. Does it seem to run at uniform speed? If not, where does it run the fastest? Where does it run the slowest?

- F. Find a railroad crossing and measure the width of the crossing. Then measure the time it takes for the engine to cross the crossing. Be precise; measure from the time the front of the engine enters the crossing to the time the front of the engine leaves the crossing.

Width of crossing: _____ m

Time for engine to cross: _____ sec

- G. Use the measurement you made for the time it took for the train engine to cross a crossing to calculate the speed of the train. After riding the train, do you think this is a good estimate of the average speed of the train? If not, estimate the average speed.

Crossing speed: _____ m/sec

Average speed: _____ m/sec

- H. Use the average speed and the actual running time to estimate the length of one circuit of the track.

Length of track: _____ m

Math & Science

Destination: FIESTA BAY BOARDWALK

Location: S.S. OVERBOARD

INTRODUCTION: The S.S. Overboard is a ship that acts as a pendulum. While riding the S. S. Overboard, you will be experiencing a free fall at times and a sensation of weightlessness at times.

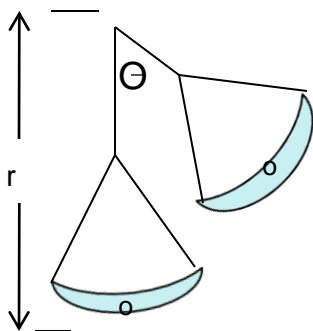
• **MISSION: MAKING MEASUREMENTS**

A. Observe the 'propulsion system' underneath the ship. Describe how it works to power the ride.

B. Measure the time for the boat to make 3 to 5 complete oscillations while the propulsion system is disengaged.

of oscillations _____ $t =$ _____ sec

C. Using the triangulation, measure the radius of the boat's path (from pivot point to the center of the boat). This measurement corresponds to the length of the pendulum. Explain how you arrived at your measurement.



$r =$ _____ m

D. Describe your sensations of weight:

a. at rest.

b. moving through the lowest point.

c. at the highest point.

Math & Science

Destination: SPASSBURG

Location: DIE FLIEDEMAUS (WAVE SWINGER)

INTRODUCTION: This ride is a traditional European manufactured swing ride. Ever wonder what it feels like to ride aboard a spinning top? On Die Fliedemaus each rider is in an individual seat that swings from a rotating top.

- **MISSION: CALCULATE THE SPEED OF A RIDE**
 - A. Try this: time the ride from the moment it begins to the end of the ride. Also, count the number of rotations completed in that time. Compute the average number of rotations per second.
- **MISSION: USE PROBLEM SOLVING TECHNIQUES**
 - A. Maria's secret pen pal rode the Fliedemaus and told her to meet him there. The pen pal gave the following clues so Maria could determine who he was: number the swings #1-48. Omit every other swing starting with #2 (the even numbered swings) until only one person is left. This is the pen pal. In which seat is he sitting?

Math & Science

Destination: CRACKAXLE CANYON

Location: THE GULLY WASHER

INTRODUCTION: Get ready to be wet and wild in a twisting, turning, white water river ride complete with a drenching waterfall and long, winding, river embankments.

MISSION: DETERMINEING RATES OF TRAVEL

- A. Determine the rate of travel in your boat:
 - The length traveled is a distance of 1800 ft. Time and record your ride from beginning to end.
- B. Calculate the speed by using the following formula:
 - Distance traveled (1800 ft) divided by the time it took to travel the entire distance = the speed
- C. How could you increase your rate of travel?

ASTROLOGY

Destination: ROCKVILLE

Location: THE HUSTLER

INTRODUCTION: These over-sized billiard balls rotate on giant platforms

OBSERVATION: The Hustler is a great real-life example of the galaxy, solar system and lunar revolution for your students to observe. As your students wait in line for the ride, have them consider the center eight ball as the sun and the spinning platforms of numbers as the planets. The individual rotation of each ball or 'planet' also demonstrates how the planets rotate in space. Have your students choose a non-spinning outer ball to be our moon to demonstrate lunar revolution. Next, use each platform as a different galaxy and the center eight ball as the center of the universe to demonstrate the universe in action.

MISSION: DISCUSS YOUR OBSERVATIONS

- A. What are the two places you could place the sun on The Hustler and why?*
- B. Describe the movement of the moon in relationship to the Earth. To the Sun. You can use parts of the Hustler ride in your description.*
- C. Is there a dark side of the moon? Why or why not?*
- D. Do we see the entire moon from the surface of the Earth? Why or why not?*
- E. Explain why we see different stars in the night sky at different times of the year.*

ANSWER KEY

THE RATTLER

Cycle Time is 2:46 minutes

- a. *Answers to why time may or may not vary will depend on the timer. Graph type is teachers discretion.*
- b. *Usually more males ride the Rattler than females. Reasons will vary.*
- c. *The age group most represented are young adult and adult. Very young children are not allowed to ride and older adults are not encouraged to board this aggressive ride.*
- d. *Usually young adult males ride the front and back of the coaster. Answers will vary.*
- e. *Answers will vary*

GULLY WASHER

**There is an observation deck located adjacent to the Gully Washer River. You may find it easier to time the interval between boats and count the passengers from this vantage point. Collect data for at least 5 boats.*

STEINGASSE (BUMPER CARS)

** Answers will vary*

DIE FLIEDEMAUS

- a. *Approximately 2 minutes 30 seconds*