Six Flags OVER GEORGIA

Auto Club Group Traffic Safety FOUNDATION

MATH & SCIENCE DAY WORKBOOK

Grades 6 – 8

MAP SKILLS

Using the Six Flags Over Georgia Wall Map (the very large standing map):

- Plot the shortest route between:
  - The Front Gate and the Carousel -
  - The Crime Wave and the Great American Scream Machine -

- If you are at the Log Flumes, is it further to Goliath or Dahlonega Mine Train?

- If you want to ride the Great American Scream Machine, Georgia Cyclone, Log Flume and Dahlonega Mine Train, what order would you ride these so that you walked the shortest distance?

1._____ 2. _____
3._____ 4. _____

TO DISCUSS:

1. What music is being broadcast over the speaker system in the Cotton States section of the park?

2. The first gold rush in the United States occurred in northern Georgia during the 1830's, which ride commemorates this event?

3. What three languages are used on many signs found in the park? (Hint: Restrooms.)

4. In the Cotton States Exhibition, there is a bald eagle emblem emblazoned near the gate of a popular turn-of-the-century ride? What item does the eagle hold in its left claw?

5. The Riverview Carousel was built in 1908 but arrived at Six Flags Over Georgia in 1972. Where was this carousel located before it was placed within Six Flags Over Georgia?

6. In 1978, one of Six Flags Over Georgia's roller coasters became an innovator in the industry by being the first ever to have three loops. This coaster is still around today and is a guest favorite. Which ride is it?

7. While Monster Mansion is now a family favorite amongst the park, it used to be a ride centered on a swamp on the Georgia-Florida border. Which swamp was it and what did the ride use to be called?

8. How many miles of Roller Coaster track total are there at Six Flags Over Georgia?

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It is with great thanks for their knowledge and expertise that the individuals who devised this book are recognized.

GETTING STARTED

MAKING MEASUREMENTS

1. Time: The times that need to be measured in order to answer the questions below can easily be measured using a watch with a second hand or a digital watch with stopwatch functions. When making any measurement, the rule is to measure the quantity several times and then use the average in your calculations. This gives you the advantage of minimizing reflex actions in starting and stopping the watch and any irregularities in one motion of a ride.
When measuring a single event such as a ride cycle on ACROPHOBIA, measure the time for several repetitions of the ride and then use your average value.

2. Distance & Height: It will be necessary to measure heights, diameters, etc.; however, they will have to be measured remotely. **DO NOT INTERFERE WITH THE NORMAL OPERATION OF THE RIDE OR GO INTO RESTRICTED AREAS.**

Before you go to the park, measure the number of normal paces you take in a known distance such as 100 yards. Step off the distance several times; then divide 100 yards by your average number of paces to find the measure of your average pace. Using conversion factors, you can have your pace in yards, feet or meters. Counting the number of your paces between two points will be a basic measurement for distances in the park. Vertical heights can sometimes be measured by observing the repetitiveness of the construction.
By making a careful estimate of the size of one unit and then multiplying this height by the number in the structure, you can obtain a good measure of total height of the ride.

OBJECTIVE: To determine the acceleration and speed of a log traveling down the final chute of the Log Jamboree ride.

SUGGESTED PROCEDURE:

The final chute of the Log Jamboree is about 36 meters long. The log starts basically from rest and shoots down the hill. By measuring the time it takes the log to get to the bottom, you can determine the acceleration on the chute, and find the final speed at which you hit the water.

DATA: Use the formula a = 2D
T2 where a = acceleration (meters per second2)
D = distance from the chute
t = time down chute
Time for log to descend chute =_____seconds
(You should time several logs going down the hill to get a good idea of the average time per log.)
Acceleration of log =_____meters/second2
A body in free fall has an acceleration of 9.8 m/s2.
How does your answer compare with this?
What factors contribute to the difference of you answer?

OBJECTIVE: Students will determine the velocity and acceleration of a log traveling down the final chute of the ride.

PREVIEW:

What is velocity?

What do we need to know to find the velocity of the log?

What is acceleration?

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OBJECTIVE: To estimate our instantaneous speed with GOLIATH

***This ride might be a bit intense for many middle-schoolers, but there are several things one can do by observing the ride. We will calculate the average speed of the ride and try to figure out the instantaneous speeds at a few points.**

The **GOLIATH** ride has a total track length of approximately 1365 meters. So, using your stopwatch, time the ride from the starting point (where you first start moving) until you arrive back at the station and come to a complete stop.
Total distance: 1365 meters! ☺

Total time =_____seconds
Average speed =_____meters/second
SUGGESTED PROCEDURE:

The bottom of the first drop could be an interesting point to try and figure out the speed of the ride as it passes through this point. If the length of the train and the time for it to pass a fixed point is known, the instantaneous speed can be estimated.

First, estimate the length of the train =_____meters
DATA: Length of GOLIATH train =_____meters
Time for entire train to pass one point =_____seconds

Now use the distance/time formula to find the speed for this small section of track.
Train speed =_____meters/second

Now use the same procedure to find the instantaneous speed at two other interesting points along the track:
Point 1_____Speed =_____meters/second
Point 2_____Speed =_____meters/second

Where is the train the fastest on the ride?

In physics, what does the term "rest" mean?

How can we find the instantaneous velocity of a uniformly accelerating object if we do not know the acceleration?

What is the acceleration of a freely falling object on Earth?

How fast do you think you were going at the bottom of the slide?

The final chute of the Log Jamboree is about 36 meters long. Assume the log starts from rest and then shoots down the flume. If we measure the time it takes for the log to make the trip to the bottom, we can easily find the velocity and then the acceleration (change in velocity).If we use the formula from your textbook:

Velocity (final) - **Velocity** (start) / **Time** then we quickly find that we actually need the instantaneous velocity when the log reaches the bottom. Or we can use the formula:

Acceleration = 2 (distance) time2
Time for the log to descend the chute =_____seconds

(You will have a more accurate answer if you time several of the logs and come up with an average.)

Acceleration of log =_____meters/second/second

How does this compare to the acceleration of a freely falling object?
Why would the two accelerations be different?