

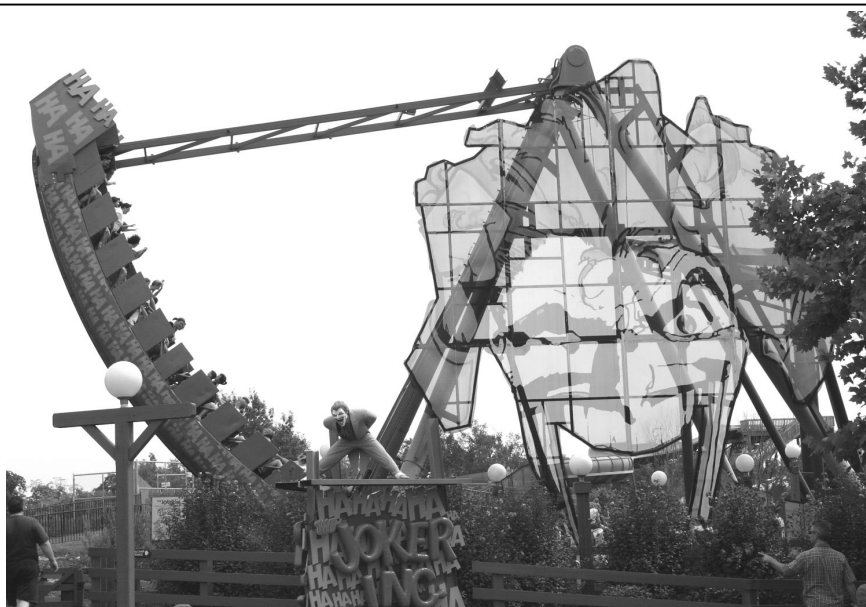
**QUALITATIVE QUESTIONS**

1. Your weight doesn't change while riding The Joker, but your *sensation* of weight does change while on the ride. What force is responsible for your *sensation* of weight?
2. Describe your sensation of weight for each position:
  - a. at rest
  - b. moving through the lowest point
  - c. at the highest point
3. At what points on the ride is the force on your back equal during the forward and backward swings? At what points on the ride is it different?

**QUALITATIVE QUESTIONS (continued)**

4. To feel the lightest, you should sit (closer to) (farther from) the center of the gondola. Explain your response.
5. Determine the period of the ride by timing one back and forth swing:
- a. for a small initial oscillation       $T =$  \_\_\_\_\_ seconds.
  - b. for a large maximum oscillation       $T =$  \_\_\_\_\_ seconds.
  - c. Was the period affected by the size of the oscillations? Explain.
6. At what point during the swing of the ride is greatest gravitational potential energy the largest and at what point of the swing is the kinetic energy the largest?
7. How do the points of greatest gravitational potential energy compare to: (the same) or (different than)
- a. points of lowest accelerometer readings \_\_\_\_\_
  - b. points of maximum accelerometer readings \_\_\_\_\_
  - c. points of minimum velocity \_\_\_\_\_
  - d. points of maximum velocity \_\_\_\_\_
8. How do the points of greatest kinetic energy compare to: (the same) or (different than)
- a. points of lowest accelerometer readings \_\_\_\_\_
  - b. points of maximum accelerometer readings \_\_\_\_\_
  - c. points of minimum velocity \_\_\_\_\_
  - d. points of maximum velocity \_\_\_\_\_
9. What two forces are acting on you during the ride?
- a. \_\_\_\_\_ b. \_\_\_\_\_
10. Does the number of people on the ride alter any results or conclusions? Explain!

## QUANTITATIVE QUESTIONS



1. Use the triangulation technique to determine the radius of the ride.
2. Determine the period of the ride by timing one back-and-forth swing.
3.
  - a. Based on the radius of the ride, use the simple pendulum equation to predict the period of a Joker-sized pendulum.
  - b. Is the calculated period for a simple pendulum the same as the period measured for the Joker? Explain.
4. Align your Force Factor meter **head-to-toe** and record the maximum swing readings:
  - a. moving forward through the lowest point \_\_\_\_\_
  - b. at the highest point \_\_\_\_\_
5. Align your Force Factor meter **front-to-back** and record the maximum swing readings:
  - a. moving forward through the lowest point \_\_\_\_\_
  - b. at the highest point \_\_\_\_\_
6. Where did the maximum Force Factor occur? Is this point the same for every seat? Explain!
7. Are the maximum and minimum Force Factor readings the same for every seat? Explain!

- a. at rest

c. at the highest point

- a. at the highest point

b. moving forward through the lowest point