

**QUALITATIVE QUESTIONS**

1. What two types of forces are acting on you during the ride?  
a. \_\_\_\_\_ b. \_\_\_\_\_
2. 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?
3. Describe your sensation of weight for each position (greater than, less than or equal to  $F_g$ ):
  - a. at rest
  - b. moving through the lowest point
  - c. at the highest point
4. At what points on the ride is the force on your back (not your bottom) equal to zero?
5. Does your answer to this question depend on whether you are moving forwards or backwards?

**QUALITATIVE QUESTIONS (continued)**

6. To feel the lightest, should you sit closer to the ends of the boat or closer to the middle of the boat? Explain your response.
7. 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.
8. 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?
9. 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 \_\_\_\_\_
10. 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 \_\_\_\_\_
11. Does the number of people on the ride alter any results or conclusions? Explain!

**QUANTITATIVE  
QUESTIONS**

1. Determine the period of the ride by timing one back-and-forth swing.



2. 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 \_\_\_\_\_
3. 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 \_\_\_\_\_
4. Is the point in the ride's swing where you are moving the fastest the same for every seat? Explain!
5. Where did the maximum Force Factor occur? Is this point the same for every seat? Explain!
6. Are the maximum and minimum Force Factor readings the same for every seat? Explain!