

**QUALITATIVE QUESTIONS**

1. As riders sit in the stationary Highland Fling how are the rider's bodies oriented relative to the spokes of the ride? (A diagram might help)

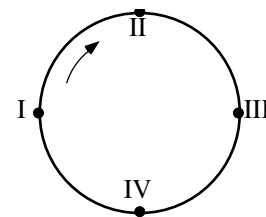


2. Observe the Highland Fling as it reaches full speed while still oriented horizontally. How are the rider's bodies positioned or arranged relative to the spokes of the ride?
3. How does this arrangement change as the ride speeds up?
4. Continue to watch the ride as it tilts from horizontal to vertical. Now how are the rider's bodies arranged relative to the spokes of the ride?
5. Compare the tangential speed of a car to the tangential speed of the middle of a spoke. Explain!
6. Compare the angular speed of a car to the angular speed of the middle of a spoke. Explain!

## QUALITATIVE QUESTIONS (continued)

7. Consider the diagram to the right. When the ride is spinning vertically, at what point:

- a. are you going fastest? \_\_\_\_\_
- b. are you going slowest? \_\_\_\_\_
- c. do you feel heaviest? \_\_\_\_\_
- d. do you feel lightest? \_\_\_\_\_



8. When the ride is spinning horizontally, predict whether or not the readings from your Force Factor meter (positioned head-to-toe) will differ significantly between positions I, II, III, and IV.

9. When the ride is spinning vertically, predict which of the positions I, II, III, or IV will have a Force Factor meter reading (positioned head-to-toe) that is a:

- a. maximum: \_\_\_\_\_
- b. minimum: \_\_\_\_\_
- c. halfway between the maximum and the minimum: \_\_\_\_\_

10. Take head to toe Force Factor meter readings at positions I, II, III, and IV when the ride is vertical and when it is horizontal.

| Ride orientation  | Force Factor<br>At position I | Force Factor<br>At position II | Force Factor<br>At position III | Force Factor<br>At position IV |
|-------------------|-------------------------------|--------------------------------|---------------------------------|--------------------------------|
| <b>Horizontal</b> |                               |                                |                                 |                                |
| <b>Vertical</b>   |                               |                                |                                 |                                |

11. Are your answers for #8 and #9 consistent with your Force Factor readings? Explain.