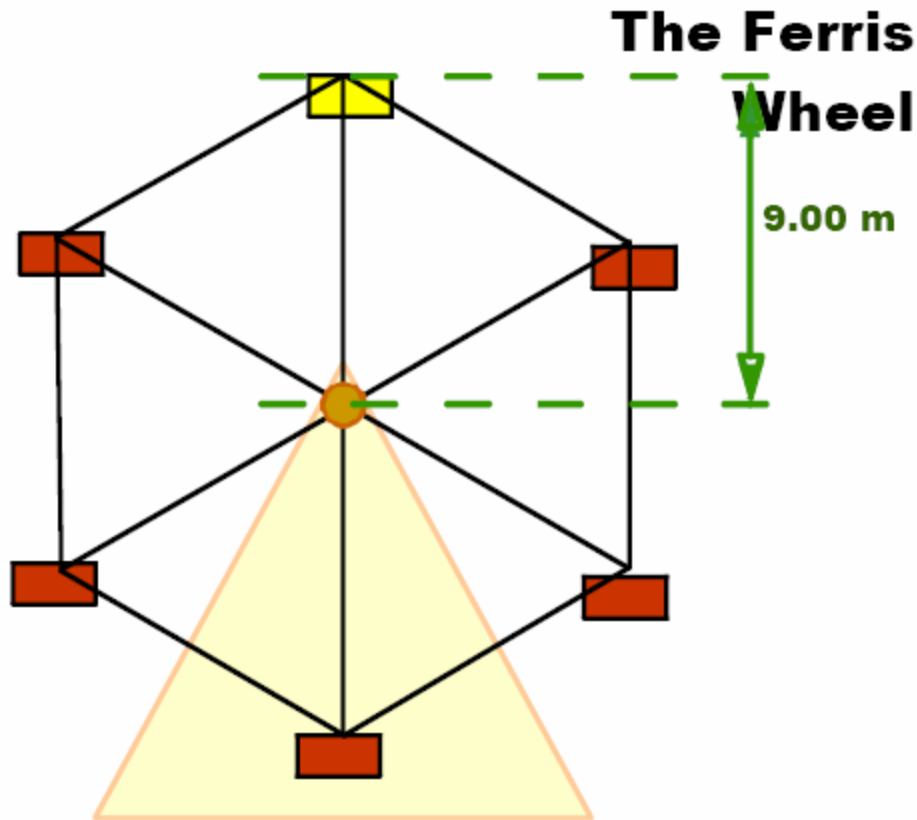


## Ride #1: The Ferris Wheel

Find a computer displaying the circular motion page. Select Ferris Wheel. Press the PLAY button to see the animation.

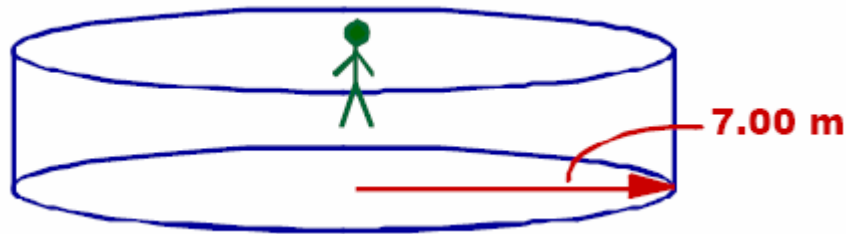


1. Use the stopwatch to measure the period of motion for the ferris wheel. What is it's period? \_\_\_\_\_ s
2. Calculate a rider's tangential velocity. Show all work below.  $v = \text{_____ m/s}$
3. Calculate a rider's centripetal acceleration. Show all work below.  $a = \text{_____ m/s}^2$
4. If the mass of a rider is 65 kilograms, how much centripetal force is exerted on him/her? Show all work below.  $F = \text{_____ N}$
5. What is supplying the centripetal force keeping the rider moving in the circular path? \_\_\_\_\_

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## Ride #2: The Anti-Gravity Machine

Click on the link Anti-gravity machine to answer the following questions. Click the PLAY button to see the animation.



1. Use the stopwatch to measure the period of motion for the ferris wheel. What is it's period? \_\_\_\_\_ s
2. Calculate a rider's tangential velocity. Show all work below.  $v = \underline{\hspace{2cm}}$  m/s
3. Calculate a rider's centripetal acceleration. Show all work below.  $a = \underline{\hspace{2cm}}$  m/s<sup>2</sup>
4. If the mass of a rider is 55 kilograms, how much centripetal force is exerted on him/her? Show all work below.  $F = \underline{\hspace{2cm}}$  N
5. What is supplying the centripetal force keeping the rider moving in the circular path? \_\_\_\_\_

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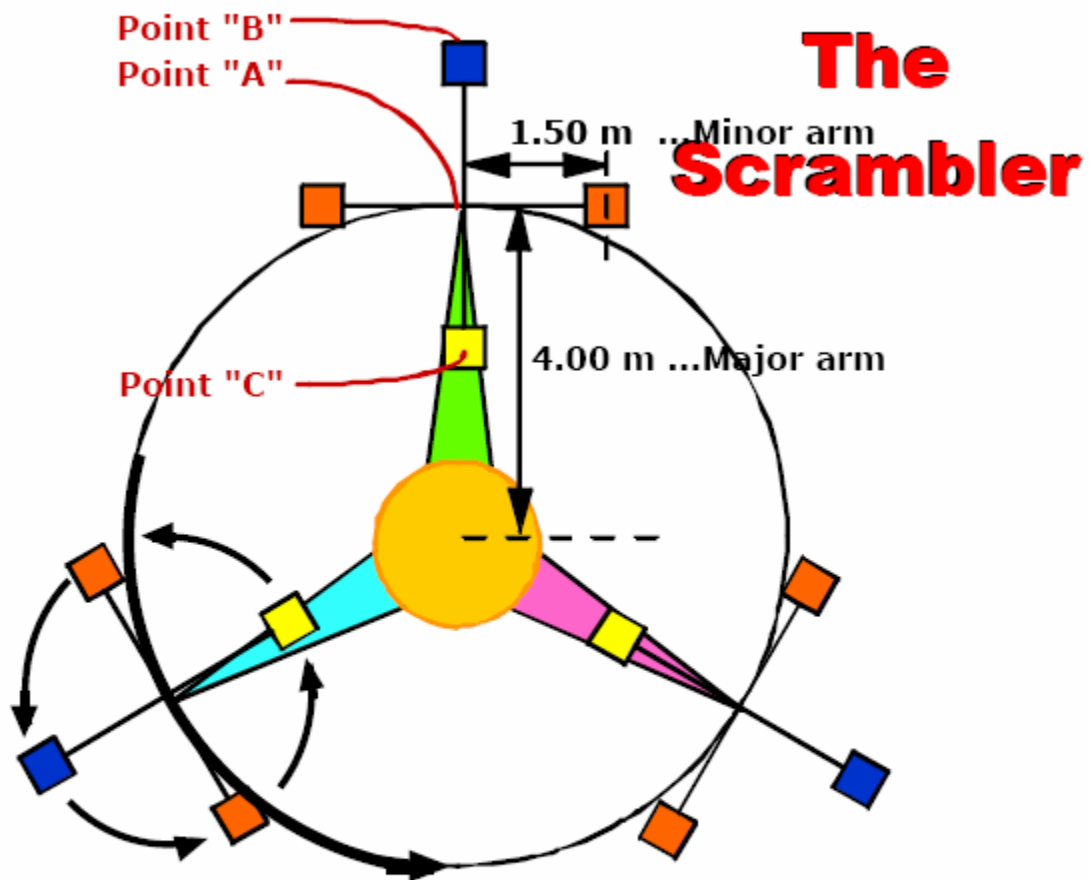
## Ride #3: The Roller Coaster

Select the roller coaster. **Read through the measurement animation. Understand the method being described. You will use this method.** We will IGNORE gravity for this exercise.

Click to the movie and run it. Use the stopwatch as needed.

- 1) What is the length of the roller coaster train?
  
  
  
  
  
  
  
  
  
  
  - 2) What is the velocity of the train at the highest point on the loop? Show all work below.
  
  
  
  
  
  
  
  
  
  
  - 3) Using the tangential velocity, find the centripetal acceleration at the highest point on the loop? ( $R = 7.00 \text{ m}$  at the loop's top.) Show all work below.
  
  
  
  
  
  
  
  
  
  
  - 4) If train's car with rider has a mass of 455 kg, then what centripetal force is exerted on the car?
  
  
  
  
  
  
  
  
  
  
  - 5) What is supplying the centripetal force to keep the coaster car traveling in a circle?
-

## Ride #4: The Scrambler



The "Scrambler's" motion is a complex circular motion. When rider is the farthest away from the center, point B, the rider is moving with a speed equal to the tangential velocities about the minor axis AND the major axis. The rider's radius is equal to the distance between him/her and the center. When the rider is closest to the center, point C, the rider experiences a velocity that is the difference between the major and minor axis.

7.1) What is the period of motion when the MINOR axis is the radius?

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7.2) What is the tangential velocity when the MINOR axis is the radius?

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7.3) What is the period of motion when the MAJOR axis is the radius?

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7.4) What is the tangential velocity when the MAJOR axis is the radius?

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7.5) What is the centripetal acceleration in g's at point A? (Ignore the motions and look at the absolute radius the ride chair is spinning about.)

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7.6) What is the centripetal acceleration in g's at point B?

