

Name: _____ Date: _____

Ferris Wheel

Renny is a Ferris Wheel fanatic. She saved and bought a ticket to Japan to go on the Palallete Town Ferris Wheel (pictured below).



She went online and got the following information:

Height: 115 meters
Diameter: 100 meters
Rotation speed: 16 minutes/revolution
Location: Odaiba, Tokyo, Japan
Opening: 1999

Renny wants to tweet how high she is above the ground every 5 minutes. She decides that she will have to figure out how high she will be beforehand.

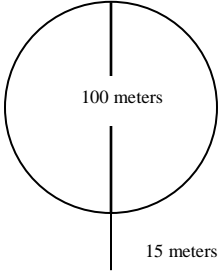
1. Draw and label a diagram of the Ferris wheel.

2. What is the angle of rotation *per minute*?

3. Create a trigonometric function to model Renny's height, in meters, over time, in minutes.

4. How high will Renny be at five minutes? Ten minutes? Fifteen minutes?

5. Renny boarded the ride at 10:00 a.m. and stays on the ride for three rotations. At what times was she at 46 meters?

Ferris Wheel	Rubric	
<p>The core elements of performance required by this task are:</p> <ul style="list-style-type: none"> Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. <p>Based on these, credit for specific aspects of performance should be assigned as follows</p>	points	section points
<p>1. Gives correct answer:</p> <div style="text-align: center;">  <p>A diagram of a Ferris wheel represented as a circle. A vertical line segment passes through the center of the circle, representing the diameter. The diameter is labeled "100 meters". A shorter vertical line segment extends from the center of the circle down to the bottom edge of the circle, representing the radius. This radius is labeled "15 meters".</p> </div>	1	2
<p>2. Gives correct answer: 22.5</p>	1	1
<p>3. Gives correct answer: $65 - 50\cos(22.5t)$</p>	1	1
<p>4. Gives correct answers:</p> <p>5 minutes: 84.13 meters</p> <p>10 minutes: 100.35 meters</p> <p>15 minutes: 18.81 meters</p>	1 1 1	3
<p>5. Gives correct answers:</p> <p>10:03; 10:13; 10:19; 10:29; 10:35; 10:45</p> <p>Partial credit:</p> <p>3 correct times</p> <p>1 correct time</p>	3 2 1	6
Total Points		13