Calculating Ferris Wheel Speed- I feel like I’m going in circles

STANDARDS

Content: Round numbers to given place values
Content: Solve problems involving decimal values
Content: Calculate rates
Content: Give evidence of work done to solve a problem
Process: Make conclusions from given data

TASK

A lover of amusement park rides, you know that Navy Pier in Chicago has a giant Ferris wheel. You also know that riders hop off and on without it ever stopping. What you do not know is how fast the wheel is moving in order for this to occur. You’ve looked various places but have not been successful in finding its rate of speed. However, you did find some information on the Navy Pier website (time = 7 minutes and diameter = 140 feet). Using these variables, calculate the speed of the Ferris wheel to the nearest tenth.

RUBRIC

<table>
<thead>
<tr>
<th>Criteria</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence (work) is shown of steps taken to find circumference</td>
<td>Work clearly indicates progression of steps taken to solve problem</td>
<td>Some work is shown, but a step is missing leaving progression at times difficult to follow</td>
<td>Some work is shown, but more than one step is missing leaving progression unclear</td>
</tr>
<tr>
<td>Circumference calculations are correct</td>
<td>All calculations performed correctly to arrive at right answer</td>
<td>1 error in calculations</td>
<td>More than 1 error in calculations</td>
</tr>
<tr>
<td>Circumference is rounded to the nearest tenth and has correct units</td>
<td>Circumference is rounded to the nearest tenth and has correct units</td>
<td>Circumference is not rounded to the nearest tenth or it does not have correct units</td>
<td>Circumference is rounded to the nearest tenth and does not have correct units</td>
</tr>
<tr>
<td>Evidence (work) is shown of steps taken to find speed</td>
<td>Work clearly indicates progression of steps taken to solve problem</td>
<td>Some work is shown, but a step is missing leaving progression at times difficult to follow</td>
<td>Some work is shown, but more than one step is missing leaving progression unclear</td>
</tr>
<tr>
<td>Speed calculations are correct</td>
<td>All calculations performed correctly to arrive at right answer</td>
<td>1 error in calculations</td>
<td>More than 1 error in calculations</td>
</tr>
<tr>
<td>Speed is rounded to the nearest tenth and has correct units</td>
<td>Speed is rounded to the nearest tenth and has correct units</td>
<td>Speed is not rounded to the nearest tenth or it does not have correct units</td>
<td>Speed is rounded to the nearest tenth and does not have correct units</td>
</tr>
<tr>
<td>Rate is written correctly as a statement</td>
<td>Rate is written correctly as a statement</td>
<td>Rate is not written correctly as a statement</td>
<td></td>
</tr>
</tbody>
</table>

Total _________/20
A lover of amusement park rides, you know that Navy Pier in Chicago has a giant Ferris wheel. You also know that riders hop off and on without it ever stopping. What you do not know is how fast the wheel is moving in order for this to occur. You’ve looked various places but have not been successful in finding its rate of speed. However, the following is posted on the Navy Pier website:

**Navy Pier Ferris Wheel** - presented by McDonald’s

Take a 7-minute ride on Navy Pier’s most visible attraction, the 150 foot-high Ferris wheel. The Ferris wheel is open year-round* and is great fun for kids of all ages! Modeled after the very first Ferris wheel, which was built for Chicago’s 1893 World’s Columbian Exposition, the Navy Pier Ferris wheel provides unparalleled views of the Chicago skyline and lakefront. The Pier’s Ferris wheel has 40 gondolas, each seating up to 6 passengers. In the evening, the Ferris wheel’s 40 spokes, spanning a diameter of 140 feet, are illuminated by thousands of sparkling lights.

* Weather permitting and subject to closure for maintenance.

http://www.navypier.com/things2do/rides_attract/pier_park.html

Well, you know that speed is distance divided by time. So you need values for both distance and time. You can clearly see the time is given (this is the time it takes to go around once). All you need is the distance. Distance around a circle... hmmm, what was that called? Not diameter, but good thing that value is given as you consider the equation used to find distance around a circle.

Please fill out the following work page as you accomplish this task.

Distance

Find the distance traveled by completing one revolution on the Ferris wheel. Write and solve your equation in three lines as modeled in class. Show computation work to the right. Round your answer to the nearest tenth. Remember units.

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Time

The time it takes to complete one revolution on the Ferris wheel is _____________________________ (remember units)
Rate of Speed

Find the rate of speed by dividing your value for distance by that for time. Write your equation in three lines as modeled in class (the first line is given). Show computation work to the right. Round your answer to the nearest tenth. Remember units.

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\text{speed} = \frac{\text{distance}}{\text{time}}
\]

\[
\text{speed} = \underline{\quad}\quad\quad\quad\quad\quad\quad
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\text{speed} = \underline{\quad}\quad\quad\quad\quad\quad\quad
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\text{speed} = \underline{\quad}\quad\quad\quad\quad\quad\quad
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Interpret your Rate of Speed.

Look at your rate of speed. Write this rate in sentence form.

When sitting on the Ferris wheel, riders move \underline{\quad} feet in one minute.