



# Slice of Pi

## Exploring Circular Objects

Name(s) \_\_\_\_\_

Date \_\_\_\_\_

Instructor/Class \_\_\_\_\_

### *Please answer the following questions.*

- Imagine that you didn't have a computer and that someone asked you to measure the outside of the clock face. How would you do it?
  - You could take a piece of string, wrap it around the clock face, and then measure it.
  - You could draw a whole bunch of very short, straight lines just inside the circumference and then add up their lengths.
  - You could take a pizza-cutter wheel, make a mark somewhere on its edge, draw a "start" line on a piece of paper, and measure the distance the wheel had to travel from the "start" line to where the mark made a full revolution. Then you could see how many pizza-cutter lengths it would take to go around the clock face.

Image	Diameter	Radius	Circumference
<i>Clock face</i>			

- What is the relationship between the two distances?
  - The radius looks as if it's about half as long as the diameter.
  - The diameter appears to be twice the length of the radius.
- What relationship is there between the circumference and the diameter? (Hint: Again, if you're not happy with your circle, you can click outside it to remove that circle and start over.)
  - The circumference is about three times the length of the diameter.
  - The diameter is half the circumference.

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(Use the table below to record your answers.)

<b>Image</b>	<b>Diameter</b>	<b>Circumference</b>	<b>Ratio c/d</b>
<i>Basketball hoop</i>			
<i>Bicycle wheel</i>			
<i>Dime</i>			
<i>Fan</i>			
<i>Fire hydrant</i>			
<i>Bicycle wheel (in sign)</i>			
<i>Moon</i>			
<i>Earth</i>			

4. Even though these circles are different sizes, does the relationship between the diameter and the circumference change?
- Yes. Depending on the size of the circle, the diameter is sometimes larger than the circumference.
  - No. The diameter is always about one-third of the circumference.
5. Since we know the diameter and want to know the circumference, which ratio gives you the desired relationship between the circumference and diameter?
- Circumference divided by the diameter (c/d)
  - Diameter divided by the circumference (d/c)
6. What do you notice?
- The answers range from 2.14 to 4.12, depending on the size of the circle.
  - The answers are all close to the same value.
  - The ratio between the circumference and the diameter is always approximately 3.14.

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7. If  $C$  is circumference,  $d$  is diameter, and  $\Pi$  is pi, which is the correct formula that describes how to find the circumference of a circle?

- $C = d / \Pi$
- $C = \Pi d$

8. Now, assuming that  $C$  is circumference,  $r$  is the radius, and  $\Pi$  is pi, write a formula that describes how to find the circumference of a circle using the radius.

- $2C = \Pi r$
- $C = 2\Pi r$

9. First, use the formula  $C = \Pi d$ , to find the circumference of the Moon from the average diameter you calculated. Record the result on your Data Sheet. Then, use WebImage to measure the circumference of the Moon, and enter that result as well. What do you notice?

- There's no resemblance between the two answers.
- The two answers are the same (or at least pretty close to one another).