

Twizzling Around the Circle: What Is a Radian?

Review Terms:

Central Angle:

Concentric Circles:

Circumference:

Arc Measure:

Arc Length:

Terminal Point:

Semi-circle:

Activity – Part 1

Step 1: Using the individually wrapped Twizzler, pull the strings apart.

Step 2: Using a few strings, measure them against the radius of the circle provided and pinch off several pieces equal to the length of the radius. You should have 8 ! 9 radii lengths. (You may eat the excess.)

Step 3: Place the radii lengths around the circumference of your circle end to end, starting where the positive x-axis intersects your circle. Traveling in the positive direction, mark off the terminal points corresponding to the ends of each of the Twizzler arcs. Mark as many terminal points as you can in one revolution of the circle.

Step 4: Draw the terminal rays for each terminal point on your circle.

Questions

- 1) What is the diameter of your circle? Radius?
- 2) How many full arc lengths equal to the radius of the circle were you able to mark in a semicircle?
- 3) How many full arc lengths equal to the radius of the circle were you able to mark in a full circle?
- 4) Approximately how long (in comparison to the length of the radius) is the leftover part of the circumference?
- 5) What is the exact length of the circumference?
- 6) What is the exact length of half of the circumference?
- 7) What is the exact length of $\frac{1}{4}$ of the circle?
- 8) What is the exact length of $\frac{3}{4}$ of the circle?
- 9) Compare your results with someone who used a different circle. What do you notice?

Activity – Part 2

Step 1: Pull apart a new long Twizzler string. Use this string to create the circumference of a new circle concentric to the original circle. Trace this new concentric circle on your original circle. Remove the Twizzler.

Step 2: Using this Twizzler string, measure it against the radius of the new circle and pinch off several pieces equal to the length of the radius. You should have 8 - 9 radii lengths.

Step 3: Place the radii lengths around the circumference of your new circle starting where the positive x-axis intersects your circle. Traveling in the positive direction, mark off the terminal points corresponding to the endpoints of each arc that has the same length as your radius. Mark as many terminal points as you can in one revolution of the circle.

Questions

- 1) How many full arc lengths equal to the radius of the circle were you able to mark in a full circle?
- 2) Were the number of radii lengths in a semicircle the same?
- 3) What do you notice about where the end of the first radius length falls compares to the circle in activity 1?
- 4) What about the length of the second radius length? The third? Etc" ?
- 5) What effect does the size of the circle have on the location of each of the terminal points marked by the radii lengths?
- 6) What can you conclude about the length of the radii compared to the circumference of a circle?
- 7) What do you think a RADIANT represents?