



Can You Measure That in Twizzlers?



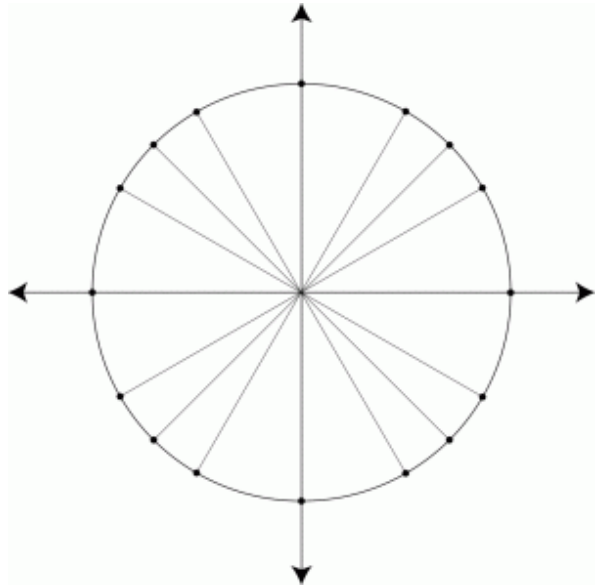
In Geometry, you learned about angles in geometric figures. Today we'll look at angles on the coordinate plane. You'll need various sizes of paper plates, scissors, a ruler, Twizzlers, and a sticky note for this lab!

1. Find the center of your paper plate and mark this location as Point O . Draw a straight line that passes through the center to represent the x -axis. Name the points where the axis meets the edge of the plate as Point B (left endpoint) and Point A (right endpoint).
2. Draw the y -axis. Think about what tools you could use to make sure this is precise.
3. What point on the coordinate plane does Point O represent?
4. What is the length of the radius of your circle, in centimeters?
5. Cut your Twizzler to be exactly the length of one radius.
6. Place one end of the Twizzler at Point A . Lay the Twizzler around the edge of the circle moving counterclockwise (up) and mark the point on the edge of the plate where the Twizzler ends. Name this mark as Point C .
7. Use a ruler to draw the central angle created by Points A , O , and C . What is the length of the arc created by $\angle AOC$ (in cm)?
8. Use your Twizzler to continue marking equal arc lengths around the circumference of your plate.
 - a. How many Twizzler arc lengths were you able to measure before reaching Point B ?
 - b. How many Twizzler arc lengths could you measure before returning to Point A ?
 - c. Compare your answers with your group members. Does your answer depend on the size of your circle? Explain.
9. Find the circumference of your circle ($C = 2\pi r$). Leave your answer in terms of π .
10. What does the circumference tell you about how many Twizzler arc lengths *should* fit around the circle? How does this compare with your answer in 8b?
11. How many Twizzler arc lengths should fit around *half* the circle? Around a *quarter* circle? Around a *sixth* of a circle?

12. Starting at Point A and measuring counterclockwise, measure 4 Twizzler lengths around the circumference of your plate. Label the point where the 4th Twizzler ends Point E.
- What quadrant is Point E in?
 - How many Twizzler lengths would you need to get to Point E if you started at Point A but moved *clockwise*?
 - How many additional Twizzler lengths would you need to get back to Point E from Point E? Does the direction you go affect your answer?
13. Clara marked a point F on the edge of her circle. She asks how many Twizzler lengths it would take to get from Point A to Point F moving counterclockwise. How many correct answers are there to Clara's question? Explain.

Lesson 6.2 – Angles on the Coordinate Plane

QuickNotes



Check Your Understanding

1. An angle in standard position has a measure of 2.7 radians. In which quadrant is the terminal ray of the angle?
2. The radius of a circle is 8 inches. A central angle of the circle has an arc length of 26 inches. What is the measure of the central angle, in radians?
3. An angle in standard position has a measure of $\frac{4\pi}{3}$ radians. Find three coterminal angles.
4. The 12 points shown are all equally spaced around the circle.
 - a. Angle 1 in standard position has a terminal ray that passes through Point A. If $m\angle 1 = \frac{7\pi}{6}$, label point A.
 - b. Angle 2 in standard position has a terminal ray that passes through Point B. If $m\angle 2 = -\frac{5\pi}{3}$, label point B.

