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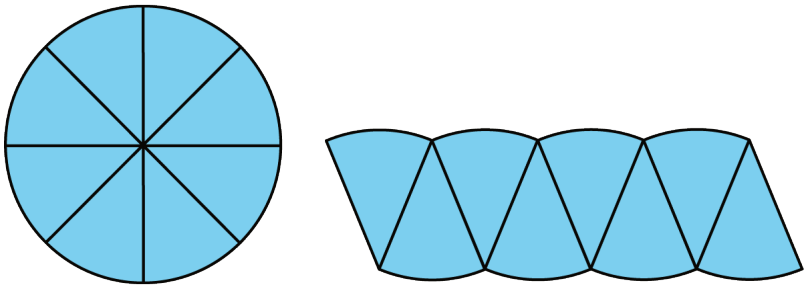
Unit 3, Lesson 8: Relating Area to Circumference

1. The picture shows a circle divided into 8 equal wedges which are rearranged.



The radius of the circle is r and its circumference is $2\pi r$. How does the picture help to explain why the area of the circle is πr^2?

2. A circle's circumference is approximately 76 cm. Estimate the radius, diameter, and area of the circle.

3. Jada paints a circular table that has a diameter of 37 inches. What is the area of the table?

4. The Carousel on the National Mall has 4 rings of horses. Kiran is riding on the inner ring, which has a radius of 9 feet. Mai is riding on the outer ring, which is 8 feet farther out from the center than the inner ring is.

   a. In one rotation of the carousel, how much farther does Mai travel than Kiran?

   b. One rotation of the carousel takes 12 seconds. How much faster does Mai travel than Kiran?

   (from Unit 3, Lesson 4)

5. Here are the diameters of four coins:

coin	penny	nickel	dime	quarter
diameter	1.9 cm	2.1 cm	1.8 cm	2.4 cm

   a. A coin rolls a distance of 33 cm in 5 rotations. Which coin is it?

   b. A quarter makes 8 rotations. How far did it roll?

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c. A dime rolls 41.8 cm. How many rotations did it make?

(from Unit 3, Lesson 5)