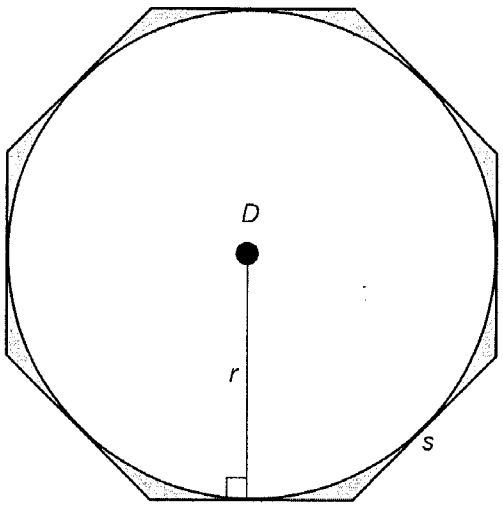
Lesson 12.3 Assignment

NAME _____ DATE _____

One Million Sides
Area of a Circle

1. Inscribed Circle *D* intersects the regular octagon at the midpoint of each side. The radius of the circle is *r*, and the length of each side of the octagon is *s*, as shown.



a. Draw 8 line segments from the center point of the circle to each vertex of the octagon to form 8 congruent triangles. How is the radius of the circle, *r*, related to the 8 triangles?

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b. Write a formula to describe the area of each of the 8 triangles.

c. Write a formula to describe the area of the octagon.

d. Write a formula to describe the perimeter of the octagon.

e. Write a formula to describe the area of the pentagon in terms of the perimeter.

It's About Circles!

Unknown Measurements

Jamal loves his dog, Rupert. On sunny days, Jamal keeps Rupert on a 12-foot leash in the backyard. The leash is secured to a stake in the ground.

1. ~~Draw~~ Sketch a picture to represent all of the area where Rupert can play. Label the radius of the circle.

   a. What is the diameter of Rupert's play area? Explain your reasoning.

   b. What is the circumference of Rupert's play area? Use 3.14 for π.

   c. What is the area of Rupert's play area? Use 3.14 for π.

   d. Suppose Jamal wants to give Rupert a little more room to play. He uses a 15-foot leash instead of the usual leash. What is the area of Rupert's play area now? Use 3.14 for π.