Lesson 12.1 Assignment

NAME _____ DATE _____

Introduction to Circles
Circle, Radius, and Diameter

Miguel is the defending watermelon seed spitting champion. He can consistently spit a watermelon seed 6 feet.

1. Miguel practices in his backyard to make sure he can defeat his competition again this year.

a. Miguel stands in the middle of his backyard. Draw a point in the middle of the space and label the point *M*.

12

b. Miguel spits a watermelon seed. Let 6 centimeters represent the 6 feet that the watermelon seed travels. Use a centimeter ruler to locate and draw a point that is 6 centimeters from point *M*. Label this point *A*.

c. Standing in the same spot, Miguel spits a second watermelon seed in a different direction. Locate another point that is exactly 6 centimeters from point *M*. Label this point *B*.

d. Miguel continues to practice. Continue to draw points exactly 6 centimeters from point *M* until you have at least 10 distinct points.

e. How would you describe the shape that is formed by connecting all of the points representing seeds located exactly 6 centimeters from where Miguel is standing?

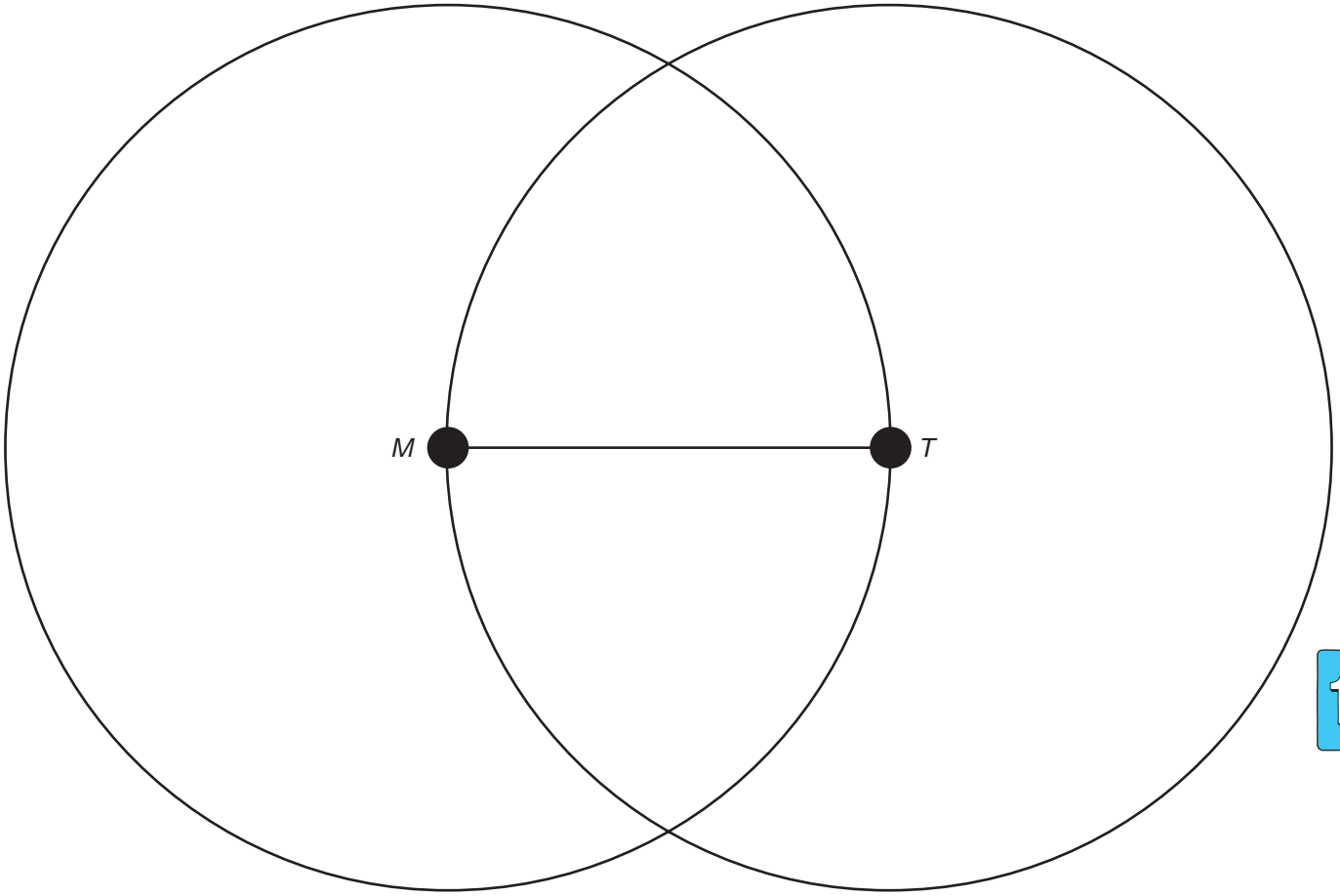
f. What is the radius of the circle formed by the seeds Miguel is spitting in his backyard? Explain your reasoning.

12

g. What is the diameter of the circle formed by the seeds Miguel is spitting in the backyard? Explain your reasoning.

NAME _____ DATE _____

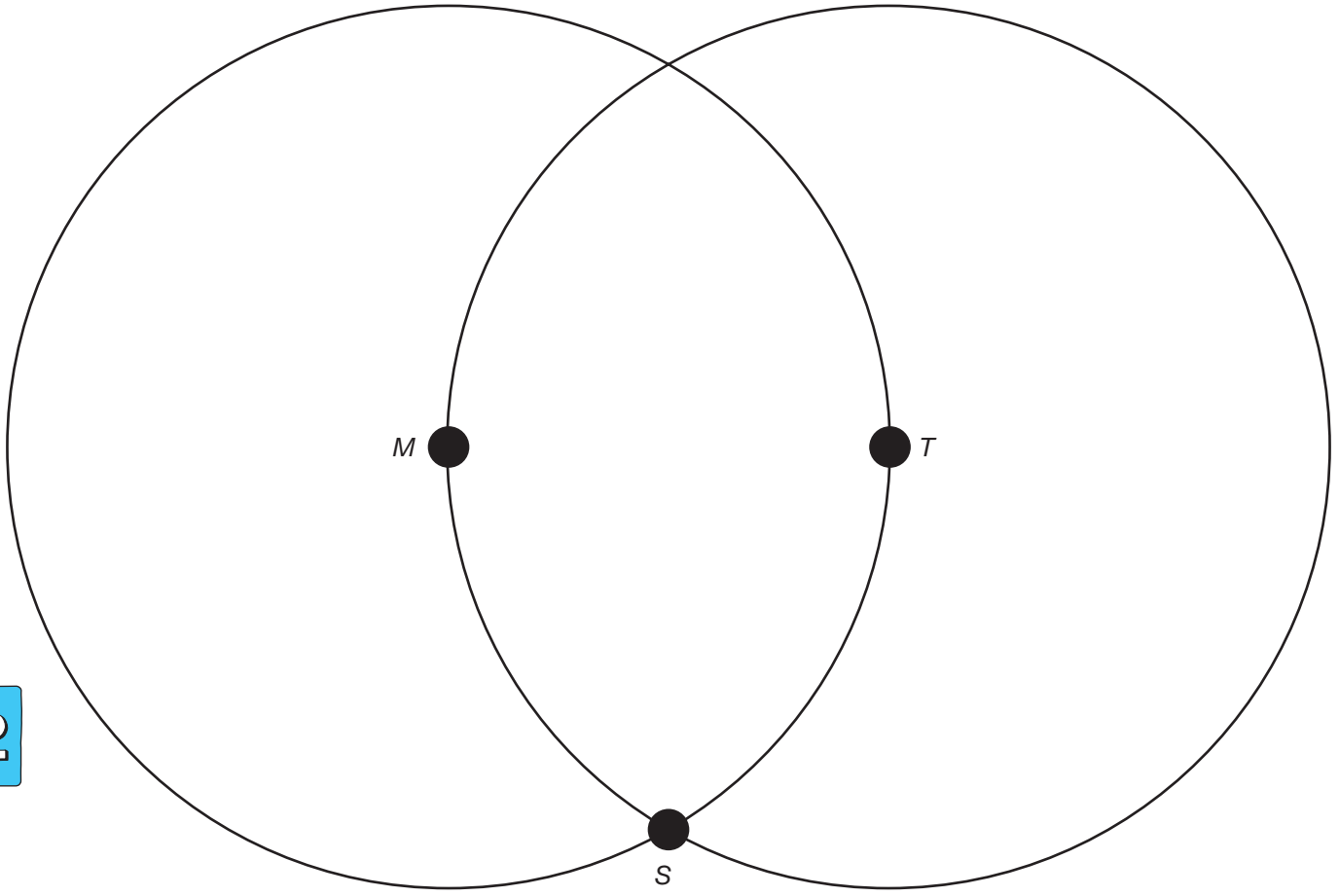
2. Miguel and his brother, Tomas, can each spit a watermelon seed 6 feet. He joins Miguel in the backyard to help him practice for a competition. Miguel and Tomas are standing 6 feet apart. The picture shows a model of the circles formed by connecting the seeds that each boy spits.



a. What can you conclude about Circle *M* and Circle *T*? Explain your reasoning.

b. What can you conclude about the lengths of the diameters of Circle *M* and Circle *T*? Explain your reasoning.

c. Miguel and Tomas, who can both spit watermelon seeds 6 feet, have been practicing their spitting and are now checking out where their seeds landed. They found that 2 of their seeds landed in the exact same spot. Let *S* represent the point where both seeds landed. Connect the points that represent Miguel, Tomas, and the spot where the seeds landed.



d. What can you conclude about the shape that is formed by Miguel, Tomas, and the spot where the seeds landed? Explain your reasoning.

Lesson 12.2 Assignment

NAME _____ DATE _____

But Most of All, I Like Pi!
Circumference of a Circle

1. Although she's only in middle school, Tameka loves to drive go-carts! Her favorite place to drive go-carts, Driver's Delight, has 3 circular tracks.

Track #1 has a radius of 60 feet.

Track #2 has a radius of 85 feet.

Track #3 has a radius of 110 feet.

a. Compute the circumference of Track #1 using the circumference formula. Let π 5 3.14.

b. Compute the circumference of Track #2 using the circumference formula. Let $\pi = 3.14$.

12

c. Compute the circumference of Track #2 using the circumference formula. Let $\pi = 3.14$.

d. Driver's Delight is considering building a new track. They have a circular space with a diameter of 150 feet. Compute the circumference of the circular space. Let $\pi = 3.14$.

NAME _____ DATE _____

5. Tameka wants to build a circular go-cart track in her backyard.

a. If she wants the track to have a circumference of 150 feet, what does the radius of the track need to be? Round your answer to the nearest hundredth, if necessary.

b. If she wants the track to have a circumference of 200 feet, what does the radius of the track need to be? Round your answer to the nearest hundredth, if necessary.

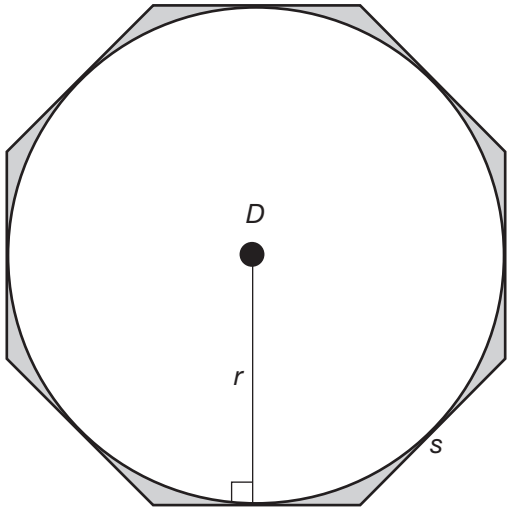
c. If she wants the track to have a circumference of 400 feet, what does the diameter of the track need to be? Round your answer to the nearest hundredth, if necessary.

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?

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.

Lesson 12.4 Assignment

NAME _____ DATE _____

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 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.

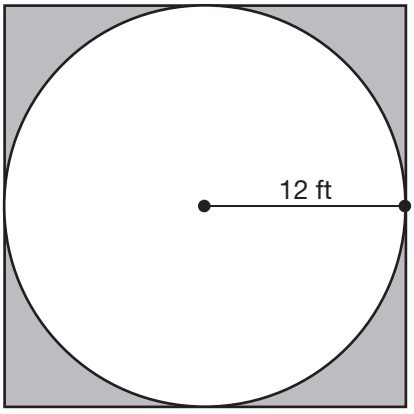
12

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.

NAME _____ DATE _____

2. Jamal would like to build a square fence around his dog Rupert's play area without infringing on the dog's space.

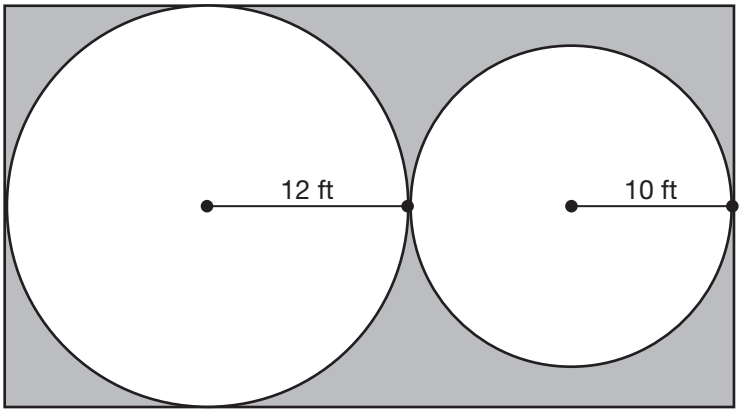


a. What is the area of the fenced-in space?

b. What is the area of the region in the fenced-in space that Rupert cannot reach when he's on the leash?

NAME _____ DATE _____

3. Jamal is dog-sitting his friend's dog, Rufus, who has a 10-foot leash. Because Jamal's dog Rupert and Rufus tend to fight when they hang out together, Jamal places their leashes in the backyard so that they are as close as possible without overlapping. Determine the area of the shaded region.



12