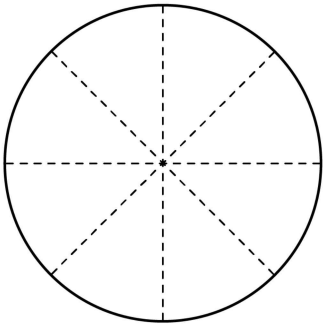
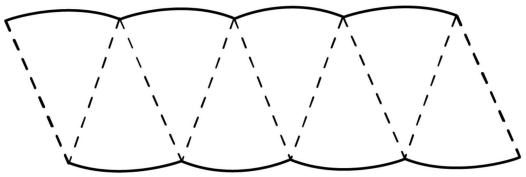
Unit: Plane Geometry & Similarity
Student Handout 2

Name _____
Date _____Pd_____

# AREA OF A CIRCLE

Professor Smart is teaching her students how the formula for the area of a circle was derived. She cuts a circle into equal pieces and rearranges them below.





A =

A =

A =

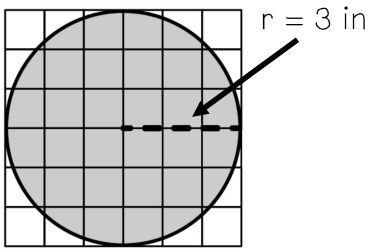
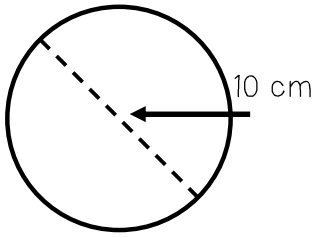
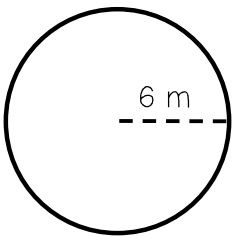
a. What general 2D figure do you see when the pieces are rearranged? What is the formula for the area of that shape?

b. Based on the diagram above, how is the circumference of the circle related to the length of the parallelogram?

## AREA OF A CIRCLE

- Area is the surface measurement of a two-dimensional figure. It is the _____ that cover a circle.
- Use the formula _____, where $r^2$ is equal to _____.

Using the diameter and radii given below, find the area of the circles.

| CIRCLE 1 | CIRCLE 2 | CIRCLE 3 |
|---|---|---|
|   |   |   |
| Formula: _____ | Formula: _____ | Formula: _____ |
| Plug in Values: _____ | Plug in Values: _____ | Plug in Values: _____ |
| In terms of π: _____ | In terms of π: _____ | In terms of π: _____ |
| Area: _____ | Area: _____ | Area: _____ |

Use your understanding of the area of circles to answer the following questions.

1. A circle has an area of 78.5 square inches. What is the radius of the circle?

2. A circular sprinkler system is installed and waters an area of 28.26 yards$^2$. What is the radius of the circle?

3. Jada says that if you are given the circumference of a circle, you have enough information to find the area of the circle. Is Jada correct? Why or why not?

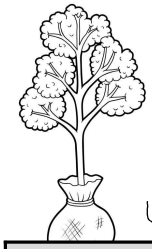
4. Determine whether area or circumference is described by each statement below.

a. The amount of fencing around a circular garden. area or circumference

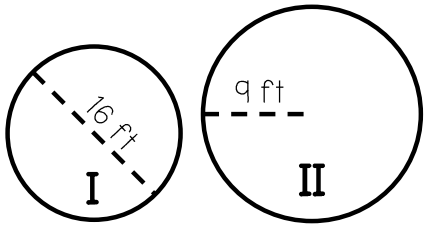
b. The amount of frosting needed to cover a cookie. area or circumference

c. The amount of crust needed to cover a pie. area or circumference

d. The distance traveled in one lap around a circular track. area or circumference



Use the image at the right to answer the question below.




5. Two different trees are being planted in an outdoor garden. Each tree requires a specific amount of space for the roots to grow. How much more space will tree II require?

| **I KNOW:** | **I NEED TO KNOW:** |
|---|---|
| **PLAN AND WORK:** | **SOLUTION:** |

**Summarize today's lesson:**

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# AREA OF A CIRCLE

Ben and Luna were asked to find the area of a circle with a diameter of 9 cm. Use their work to answer questions 1-2.

**BEN**

$A = 3.14 (9^2)$

$A = 3.14 (81)$

$A = 254.34 \text{ cm}^2$

**LUNA**

$A = 3.14 (4.5^2)$

$A = 3.14 (9)$

$A = 28.26 \text{ cm}^2$

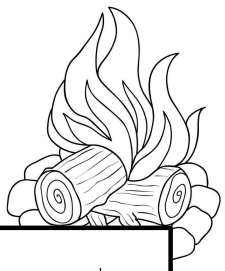
1. Describe Ben's mistake in solving for the area of the circle.

2. Describe Luna's mistake in solving for the area of the circle.

3. After identifying each of the mistakes that Ben and Luna made, find the correct area of the circle. Round your answer to the nearest hundredth.

Answer the questions below using your understanding of circles.

4. Place a checkmark by the situations that indicate area.



A. The distance a tire travels in one rotation.

B. The amount of cheese used to cover a pizza.

C. How much space a circular rug takes up.

D. The distance a car travels around a traffic circle.

E. The distance around a campsite fire.

5. A stadium floor that is in the shape of a circle has a diameter of 50 yards. What is the area of the stadium floor?

6. A flower bed surrounds the base of a tree. It is enclosed by stones to form a circle that measure 25.12 feet around. What is the radius of the circle?