

$$\pi \approx 3.14$$

The area of a **circle** is the amount of space inside the circle.

Area is always written as units squared (in², cm²).

A formula is an equation that declares the relationship between two or more quantities.

Pi (π) also used in the formula to find the area of a circle.

Using the **radius (r)**

Area Formula: $A = \pi \cdot r^2$

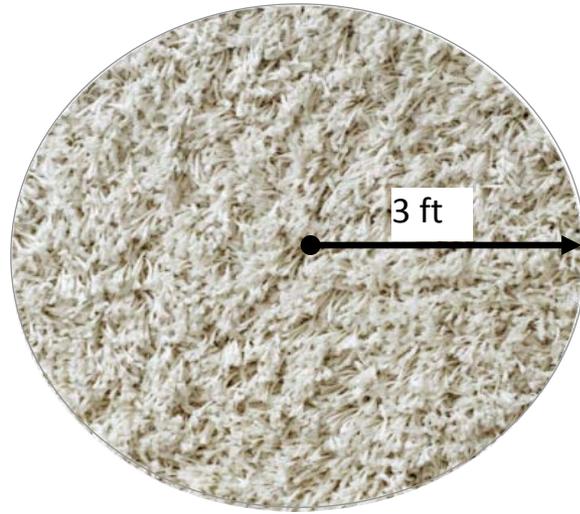
A round carpet disc has a radius of **3 ft**.

$$A = \pi \cdot r^2$$

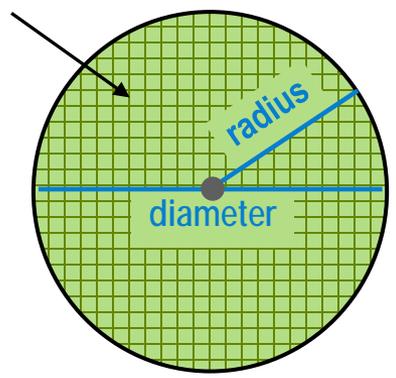
$$A = \pi \cdot 3^2$$

$$A = 3.14 \cdot 9 = 28.26$$

*The rug takes up **28.26 ft²** of space.*



area



CFU 1

What is the formula for using radius to find the area of a circle?

In your own words, what is the area of a circle?

"The area of a circle is _____."

CFU 2

How is radius related to diameter?

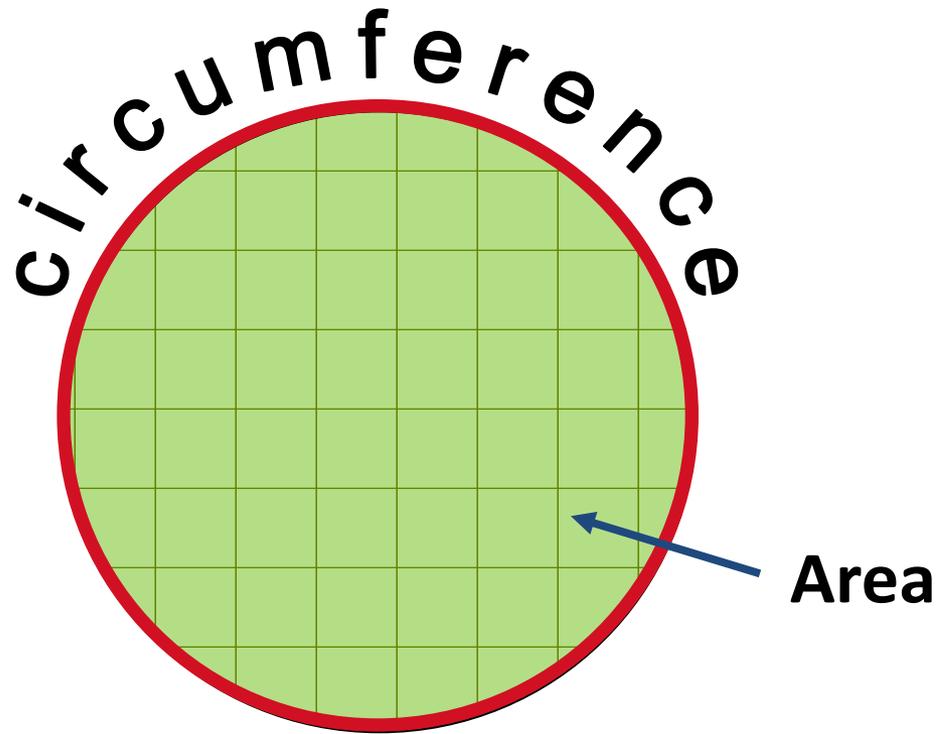
In your own words, the radius is exactly _____ of the diameter.

CFU 3

What can you do if you only know the diameter of the circle, but you want to find the area of the circle?

Vocabulary

² a number that does not change



CFU

(Pair-Share)

What do you think the difference is between the CIRCUMFERENCE of a circle and the AREA of a circle?

$$\pi \approx 3.14$$

The **circumference** of a **circle** is the distance **around** the circle.
 The **area** of a **circle** is the space **inside** the circle.

A **formula** is an equation that declares the relationship between two or more quantities.

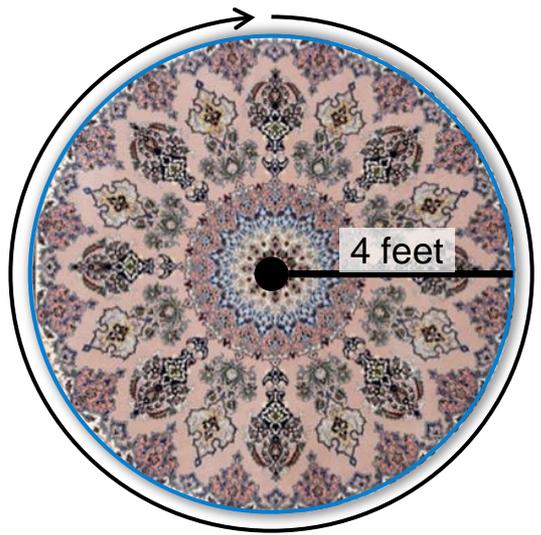
Pi (π) is the constant¹ ratio of the circumference to the diameter of a circle.

A rug has a radius of 4 feet.



Circumference

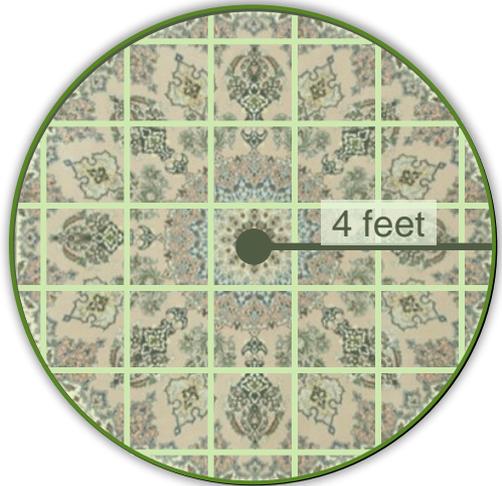
$$C = 2 \cdot r \cdot \pi$$



$$\begin{aligned} C &= 2 \cdot r \cdot \pi \\ C &= 2 \cdot 4 \cdot \pi \\ C &= 8 \cdot \pi \\ C &= 25.12 \text{ feet} \end{aligned}$$

Area

$$A = \pi \cdot r^2$$



$$\begin{aligned} A &= \pi \cdot r^2 \\ A &= \pi \cdot 4^2 \\ A &= \pi \cdot 16 \\ A &= 50.24 \text{ square feet} \end{aligned}$$

CFU 1

Chan is creating a circular garden. For which will he need to find the circumference?
 How do you know?
 A Chan wants to build a fence around the garden.
 B Chan wants to add soil to cover the garden.
 In your own words, what is the circumference of a circle?
 "The circumference of a circle is _____."

CFU 2

Chan is creating a circular garden. For which situation will he need to find the area?
 How do you know?
 A Chan wants to build a fence around the garden.
 B Chan wants to add soil to cover the garden.
 In your own words, what is the area of a circle?
 "The area of a circle is _____."

Vocabulary

¹ a number that does not change

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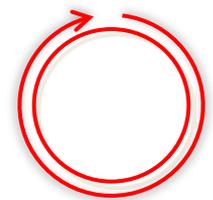
The **circumference** of a **circle** is the distance **around** the circle.
Pi (π) is the constant ratio of the circumference to the diameter of a circle.

Solve problems for the area and circumference of a circle.

- 1 Read the problem carefully.
 - a Identify₂ the given information. (underline)
 - b Determine₃ which formula to use.
- 2 Substitute the given information into the formula and solve.
- 3 Interpret the answer. (sketch and explain)

- CFU**
- 1a How did I/you identify the given information?
 - 1b How did I/you determine which formula to use?
 - 3 How did I/you interpret the answer?

1. A cookie has a diameter of 8 centimeters.
What is the circumference of the cookie?



“The circumference of the cookie is _____ centimeters.”

Circumference

$$C = 2 \cdot r \cdot \pi$$

Area

$$A = \pi \cdot r^2$$



Vocabulary

² find (synonym)
³ figure out

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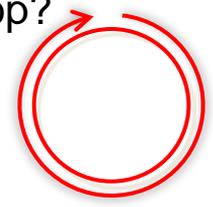
Circumference

$$C = 2 \cdot r \cdot \pi$$

Area

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2. A junior (kid's) basketball hoop has a diameter of 10 inches.
What is the circumference of the basketball hoop?



"The circumference of the hoop is _____ inches."

- Vocabulary**
- ² find (synonym)
 - ³ figure out

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3. A BMX bicycle wheel has a radius of 10 inches.
How far will the wheel travel each time it turns?

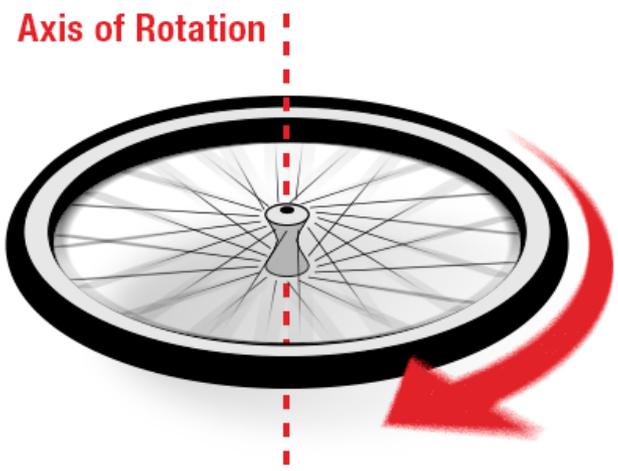


Circumference

$$C = 2 \cdot r \cdot \pi$$

Area

$$A = \pi \cdot r^2$$



"The wheel will travel (spin) _____ inches each time it turns one full rotation"

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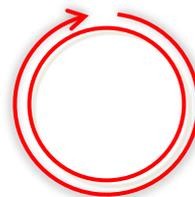
Circumference

$$C = 2 \cdot r \cdot \pi$$

Area

$$A = \pi \cdot r^2$$

4. A personal sized pizza has a radius of 6 inches.
 How long is the crust around the pizza?



"The crust is _____ inches long."

The **area** of a **circle** is the space **inside** the circle.

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- 1a How did I/you identify the given information?
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5. A barrel has a radius of 12 inches.
What is the area of the top of the barrel?



“The area of the top of the barrel is _____ square inches.”

Circumference

$$C = 2 \cdot r \cdot \pi$$

Area

$$A = \pi \cdot r^2$$

6. A pie has a radius of 7 centimeters.
What is the area of the top of the pie?



“The area of the top of the pie is _____ square centimeters.”

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CFU

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- 3 How did I/you interpret the answer?

7. An X-Large Lucia's pizza has a diameter of 18 inches.
How much space will be on top for toppings?



*"The top of the pizza has _____
square inches for toppings."*

Circumference

$$C = 2 \cdot r \cdot \pi$$

Area

$$A = \pi \cdot r^2$$

8. A round dining table has a diameter of 6 feet.
How much cloth is needed to make a tablecloth?



*"_____ square feet of cloth is
needed to make a tablecloth."*

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Skill Closure

Solve problems for the area and circumference of a circle.

- 1 Read the problem carefully.
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Circumference

$$C = 2 \cdot r \cdot \pi$$

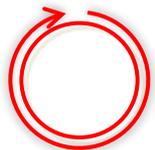
OR

$$C = d \cdot \pi$$

Area

$$A = \pi \cdot r^2$$

1. A mirror has a radius of 5 centimeters. How long will the frame have to be to go around the mirror?



"The frame will have to be _____ centimeters long."

2. What is the area of the mirror?



"The mirror has an area of _____ square centimeters."

Access Common Core

Gary is replacing the leather cover on a stool. What measurement could he find so that the new leather cover is the same size as the old one? How do you know?

Summary Closure

What did you learn today about solving problems for the area and circumference of a circle? (Pair-Share) Use words from the word bank.



Word Bank

- circumference
- area
- circle
- pi (π)
- radius
- diameter

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Area
 $A = \pi \cdot r^2$

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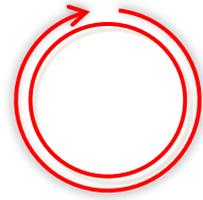
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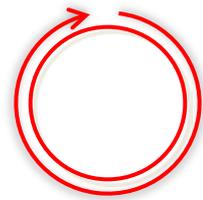
- 1 Read the problem carefully.
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- 2 Substitute the given information into the formula and solve.
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1. A platter has a diameter of 14 inches.
What is the circumference of the platter?



"The circumference of the platter is _____ inches."

2. A round pool has a radius of 14 feet.
How long is the edge around the pool?



"The edge around the pool is _____ feet long."

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3. A tree stump has a radius of 24 inches.
How much area is on top of the stump?



"The top of the stump measures _____ square inches."

4. James is replacing a stool top that has a radius of 13 centimeters.
How much wood is needed to make a new top?



"The top of the stool will need _____ square centimeters of wood."