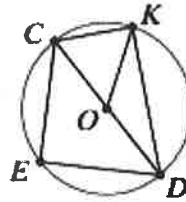


Lesson 8-4 Notes – Area and Circumference of Circles

Warm Up: Name the following for the circle to the right.

Radius: \overline{OK} , \overline{OC} or \overline{OD}


Diameter: \overline{CD}



Complete the statement:

The radius of a circle is half the length of the diameter.

Circumference of a Circle

Term	Definition	Example
Circumference	The distance around the circle.	

Investigation: What is the relationship between circumference and diameter of a circle?

Object	Diameter	Circumference	$\frac{\text{Circumference}}{\text{Diameter}}$
yogurt cup	8 cm	25 cm	3.125 cm
blue lid	19 cm	60 cm	3.15 cm
bucket	8 cm	27 cm	3.375 cm
salsa lid	9 cm	30 cm	3.33 cm
water bottle	6 cm	23 cm	3.83 cm

What do you notice about the circumference to diameter ratio? close to 3.0

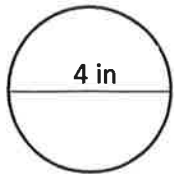
$$\pi \text{ (pi)} = 3.14$$

Formula for Circumference: πd * or $2\pi r$

\uparrow
diameter
 \uparrow
radius

Find the circumference of the following circles. πd

1.



$$\pi \cdot d = 3.14 \times 4 \text{ in} = 12.56 \text{ in}$$

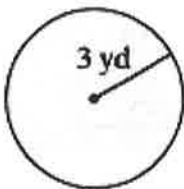
2. A circle with a diameter of 30 cm.

$$\pi \cdot d = \pi \cdot 30 = 94.2 \text{ cm}$$

Area of a Circle

Term	Definition	Formula
Area of a Circle	The space inside the circle.	$\pi r^2 = \pi(r \cdot r)$

Find the area of each circle. Round to the nearest unit.



$$\begin{aligned} &\pi r^2 \\ &\pi(3^2) \\ &\pi(9) \\ &= 28.26 \text{ yd}^2 \end{aligned}$$

$$\begin{aligned} &\pi r^2 \\ &\pi(12^2) \\ &\pi(144) \\ &= 452.16 \text{ mm}^2 \end{aligned}$$

$$\begin{aligned} &\pi r^2 \\ &\pi(10^2) \\ &\pi(100) \\ &= 314 \text{ mi}^2 \end{aligned}$$