



# Unit 4

# Circles & Area





## Warm-Up

### Review for Assessments

1) Write an algebraic expression for Karen who has 4 more than twice the amount of sweaters than Sam.

$$2x + 4$$

times  
2

Adding

b)  $(-18) + (-24)$

$$(-42)$$

same sign  
Just add #part  
keep  
same  
sign

No calculators

2. a)  $5 \times 8 \times 7 \times 20$

$$8 \times 7 = 56$$

$$5 \times 20 = 100$$

$$\underbrace{8 \times 7}_{56} \times \underbrace{5 \times 20}_{100}$$

$$\boxed{5600}$$

### Circles

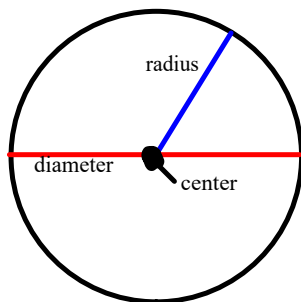
A **circle** is a shape where all points are the same distance (or equidistant) from the center.

From the math dictionary - A circle is a round flat two-dimensional shape where all points on the circumference are the same distance from the center.

The longest line through a circle, must pass through the center of the circle, this is the **diameter** of the circle.

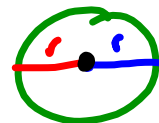
The distance from the center of the circle to the outside of the circle is called the **radius**.

The **circumference** is the distance around (or perimeter) of the circle.



There is an infinite (unlimited number) of diameters and radii (plural for radius) that can be drawn.

What is the relationship between the radius and the diameter?



The diameter is 2 times the radius -

$$d = 2r$$

or

The radius is half the diameter -

$$r = \frac{d}{2}$$

● means divide

$$d=2r \quad r=\frac{d}{2}$$

Let us try one together

1a) Find the radius if the diameter is 18 cm

Given

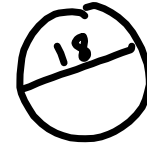
$$d=18\text{cm}$$

$$r=?$$

$$r=\frac{d}{2}$$

$$= \frac{18\text{cm}}{2}$$

$$r=9\text{cm}$$



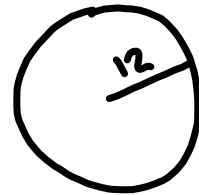
b) Find the diameter if the radius is 12 cm

Given

$$r=12\text{cm}$$

$$d=?$$

$$\begin{aligned} d &= 2r \\ &= 2(12\text{cm}) \\ &= 24\text{cm} \end{aligned}$$

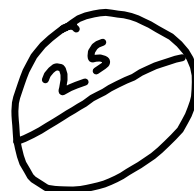


## You Try

1a) Find the radius if the diameter is 25 cm

given  
 $d = 25\text{cm}$   
 $r = ?$

$$r = \frac{d}{2} = \frac{25\text{cm}}{2} = 12.5\text{cm}$$



b) Find the diameter if the radius is 11 cm

given  
 $r = 11\text{cm}$   
 $d = ?$

$$\begin{aligned}d &= 2r \\ &= 2(11\text{cm}) \\ &= 22\text{cm}\end{aligned}$$



Circular plates with diameter 20 cm are placed side by side on a table.

The table measures 240 cm by 120 cm. <sup>20cm</sup>



$$240 \div 20 \text{ cm} = 12 \text{ plates}$$

a) How many plates can fit side by side along the length of the table?

b) How many plates can fit side by side along the width of the table?



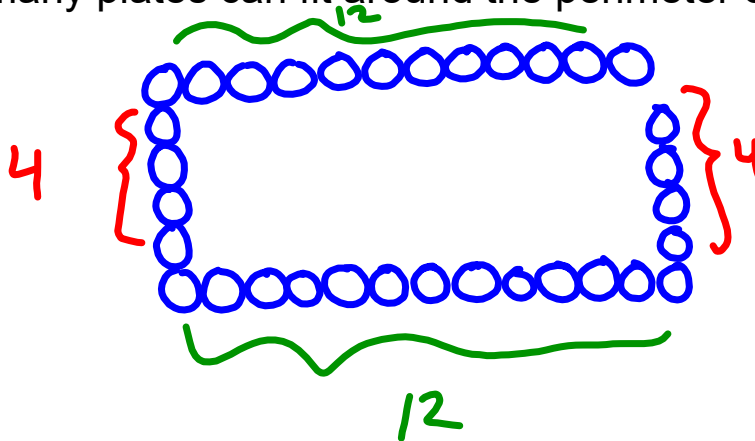
$$120 \text{ cm} \div 20 \text{ cm} = 6 \text{ plates}$$

c) How many plates can fit on the table?



$$6 \times 12 = 72 \text{ plates}$$

d) How many plates can fit around the perimeter of the table?



$$\begin{array}{r} 12 \\ + 12 \\ + 4 \\ + 4 \\ \hline 32 \\ \text{plates} \end{array}$$

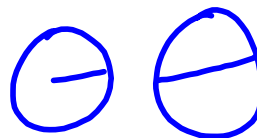
# Class Homework

$$d = 2r$$

$$r = \frac{d}{2}$$

1) Sketch a circle with the following radius

- a) 6 cm      b) 8 cm



Label the radius then find the diameter

$$d = 2r$$

$2(6)$   
 $12 \text{ cm}$

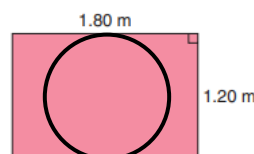
$$d =$$

2) Fill in the chart

Radius	Diameter
a)	3.8 cm
b) 7.5 cm	
c) 21 cm	
d) 80 cm	
e)	23 cm

$$r = \frac{d}{2} = \frac{3.8}{2}$$

3) A circular tabletop is to be cut from a rectangular piece of wood that measures 1.20 m by 1.80 m. What is the radius of the largest tabletop that could be cut? Justify your answer. Include a sketch



4) A glass has a circular base with radius 3.5 cm.  
A rectangular tray has dimensions 40 cm by 25 cm.  
How many glasses will fit on the tray? (Show work)

## Attachments

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Unit 4 Circles Extra practice 1 for unit 4\_1.pdf