10-1 Circles and Circumference

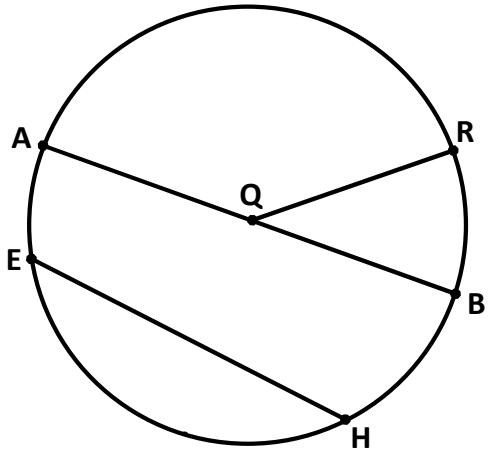
What is a circle?

"the locus of all points in a plane equidistant from a given point called the center of the circle"

What does a circle look like?

How do we name a circle?

What are the names of the segments that we see associated with a circle?



What are the formal definitions of these segment

_____: any segment with endpoints that are the **center** and **a point on the circle**

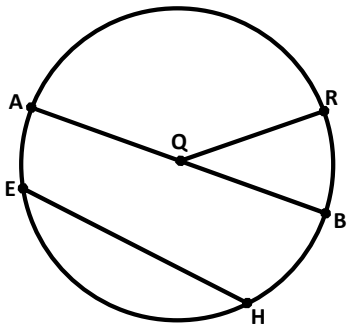
_____: any segment with both endpoints that are **on the circle**

_____: a chord that passes through the center of the circle

"The plural of radius is *radii*, pronounced RAY-dee-eye. The term *radius* can mean a segment or a measure of that segment. This is also true of the term *diameter*.

For example: "One radius of circle Q is $\overline{QR}$. The radius of circle Q is 6 feet."

"$\overline{AB}$ is the diameter of circle Q. Circle Q has a diameter of 10 yards."



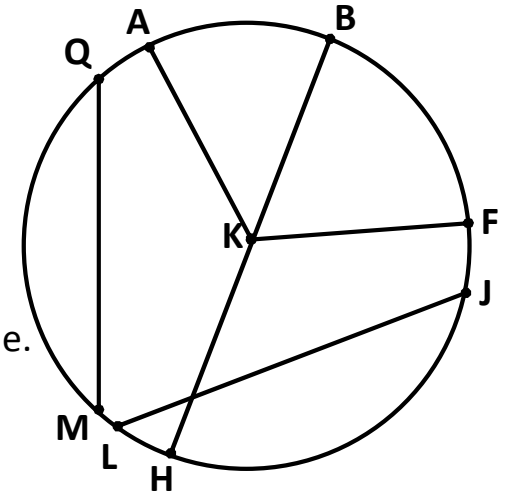
Using what we have learned so far:

1. Name the circle shown.

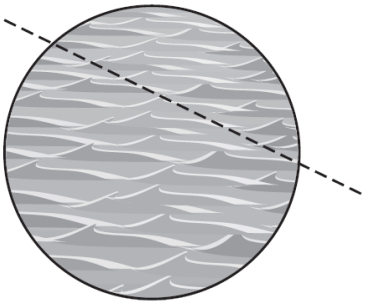
2. Name 2 radii of the circle.

3. Name all the chords of the circle.

4. Name a diameter of the circle.

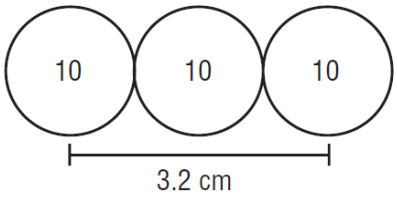


CAKE CUTTING Kathy slices through a circular cake. The cake has a diameter of 14 inches. The slice that Kathy made is straight and has a length of 11 inches.



Did Kathy cut along a *radius*, a *diameter*, or a *chord* of the circle?

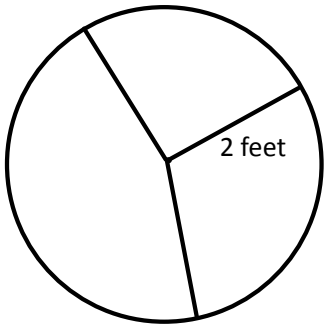
COINS Three identical circular coins are lined up in a row as shown.



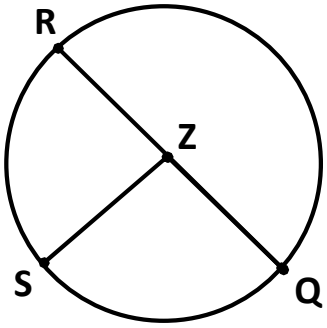
The distance between the centers of the first and third coins is 3.2 centimeters. What is the radius of one of these coins?

Using what we know for calculations

Since we know that the distance from the center of a circle to the circle itself is always the same (definition o circle), then we know what about the measures of **all the radii** of the circle?



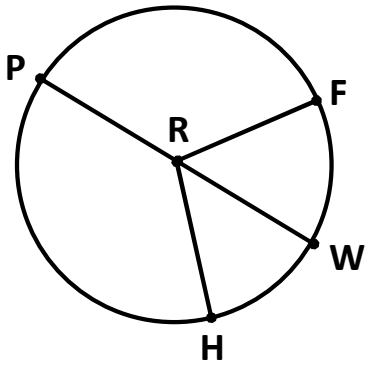
And then, what can we say about the length of the diameter of a circle?



Your turn:

1. If RW = 4 inches, what is PW? What is RH? What is FR?

2. If PW = 13 feet, what is PR? FR? RH?



What is a circumference?

"The circumference of a circle is the distance around the circle." (556)

"Circumference is most often represented by the letter C." (556

The circumference of any circle is calculated by multiplying the diameter of the circle by the mathematical constant, π, read "pi.

The mathematical definition π

$$\pi = \frac{C}{d}$$

Calculations with circumference, *C*:

$$C = \pi d \qquad d = 2r$$

$$C = \pi(2r)$$

$$C = 2\pi r$$

10.1 Notes Extended

Using $C = \pi d$ and $C = 2\pi r$

For each question, give the exact answer, and an approximate answer rounded to the nearest hundredth.

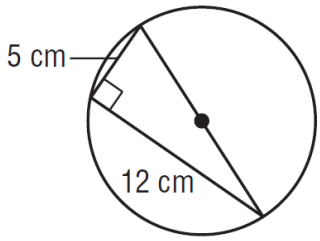
1. Find *C* if *r* = 3 centimeters

2. Find *C* if *d* = 4.3 inches.

3. Find *d* and *r* if $C = 16\pi$ feet.

How can we use other figures inside of circles to help us calculate the circumference of a circle?

Find the exact circumference of the circle.



10.1 Notes Extended

Find the exact circumference of the circle.