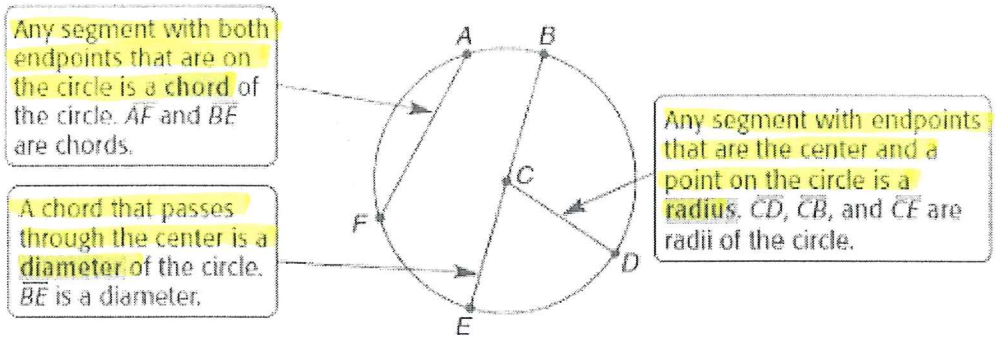
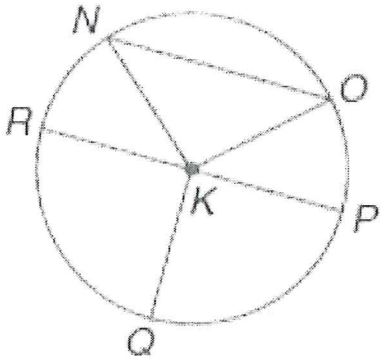
Parts of Circle

Parts of Circles A circle is the locus of all points in a plane equidistant from a given point called the **center** of the circle. A circle is usually named by its center point. The figure below shows circle C, which can be written as ⊙C. Several special segments in circle C are also shown.



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

Now you try ....



Name the circle: Circle K
⊙K

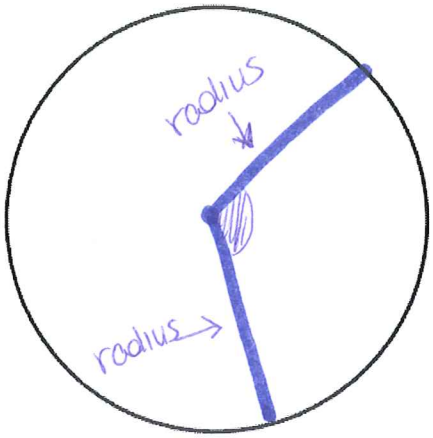
Name a radius: $\overline{KN}$, $\overline{KP}$, $\overline{KQ}$, $\overline{KO}$, $\overline{KR}$

Name a diameter: $\overline{RP}$

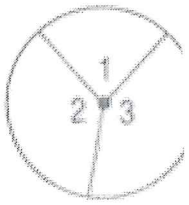
Radius = $\frac{1}{2}$ · diameter

Diameter = 2·radius

What is the Central Angle? an angle with the vertex @ center of circle • sides are radii

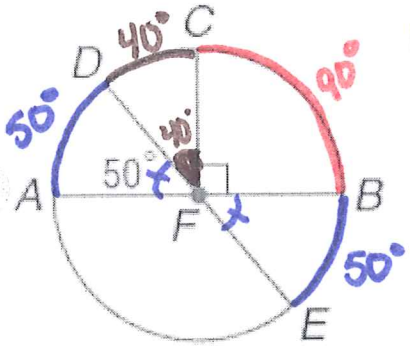


The sum of the measures of the central angle of a circle, with no interior points in common, is 360°.



$m\angle 1 + m\angle 2 + m\angle 3 =$ 360°

Example 2: Find the $m\widehat{BE}, m\widehat{CBE}, and\ m\widehat{ACE}$ → "Arc Measure"



$m\widehat{BE} = 50°$

$m\widehat{CBE} = \widehat{CB} + \widehat{BE}$

$m\widehat{CBE} = 90 + 50$

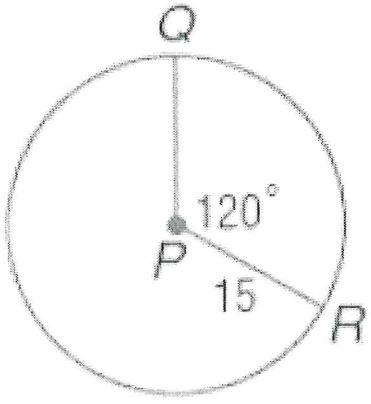
$m\widehat{CBE} = 140°$

$m\widehat{ACE} = 50 + 40 + 90 + 50$

$m\widehat{ACE} = 230°$

Is there another way? Let's try Arc Length!

Example 3: Find length of $\widehat{QR}$



$C = d\pi \rightarrow d = 30$

$C = 30\pi$

$l = \frac{120}{360} \cdot C$

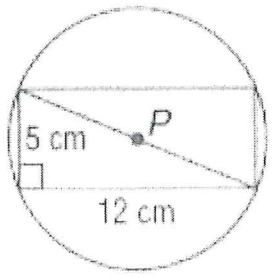
$l = \frac{120}{360} \cdot 30\pi \rightarrow l = 120 \cdot 30 \div 360\ \pi$

$l = 10\pi$ units

Arc Length = $\frac{A}{360} \cdot C$ (A ← angle; C ← circumference)

Find the Diameter, Radius, Circumference, and Area

1.



diameter = hypotenuse

$5^2 + 12^2 = c^2$

$\sqrt{169} = \sqrt{c^2}$

$13 = c$

diameter = 13cm

radius = 6.5cm

circumference = 13π

area = 42.25π

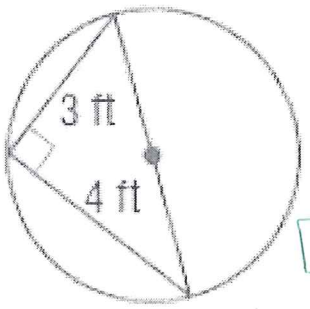
$C = \pi d$

$C = 13\pi$ or 40.84cm

$A = \pi (6.5)^2$

$A = 42.25\pi$ or 132.73cm^2

2.



$3^2 + 4^2 = d^2$

$25 = d^2$

$5\text{ft} = d$

radius = 2.5 ft

$C = \pi d$

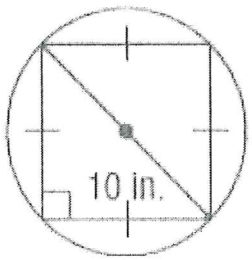
$C = \pi \cdot 5$

$C = 5\pi$ or 15.71 ft

$A = \pi (2.5)^2$

$A = 6.25\pi$ or 19.63 ft^2

3.



$10^2 + 10^2 = d^2$

$\sqrt{200} = \sqrt{d^2}$

$\sqrt{100}$ (10) $\sqrt{2}$

$d = 10\sqrt{2}$

$r = 5\sqrt{2}$

$C = \pi d$

$C = 10\sqrt{2}\,\pi$ or 44.43 in

$A = \pi (5\sqrt{2})^2$

$A = 50\pi$ or 157.08 in^2