

Name
Ms. Kresovic
Adv Geo –
Fri 22 Feb 2013

9.2: Introduction to Circles

Objective: You will be able to begin solving problems involving circles.
Leave all answers in terms of π .

Circumference $\rightarrow$ perimeter of $\odot$.
length

$$C = \pi d \text{ or } C = \pi 2r$$

Area $\rightarrow$ paint to cover wall
length $\times$ width
 $A = \pi r^2$

IF vertex is Ctr $\odot$ THEN $\angle = \cap$

Part Three: Problem Sets

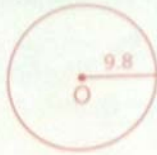
Problem Set A

- 1 Find the circumference and the area of $\odot O$.

$$C = 19.6\pi$$

$$A = 9.8^2 \pi$$

$$A = 96.04\pi$$



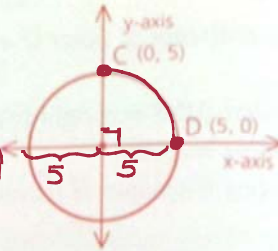
- 2 Given: Diagram as marked

Find: a The measure of the arc from C to D ($m\widehat{CD}$)

90°

b The length of $\widehat{CD}$

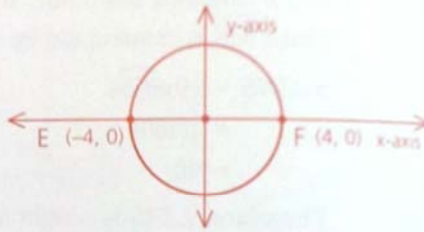
$$\frac{90^\circ}{360^\circ} \pi 10 = \frac{1}{4} 10 \pi = \frac{5}{2} \pi$$



- 3 Given: Diagram as marked

Find: a $m\widehat{EF}$

b The length of $\widehat{EF}$ to the nearest tenth

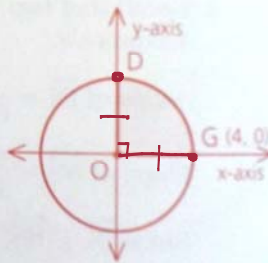


- 4 Given: Diagram as marked

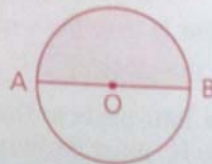
Find: a The coordinates of D $(0, 4)$

b The area of the shaded region (sector DOG)

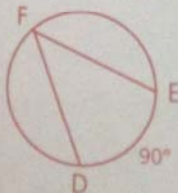
$$\frac{90}{360} \pi 4^2 = \frac{1}{4} 4^2 \pi = 4\pi$$



- 5 If $AB = 10$, what is the area of the shaded region (sector AOB)?



- 6 Find $m\angle F$.

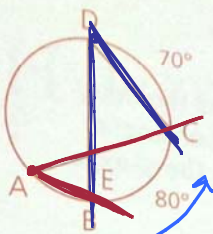


in degrees
in unit
(perimeter)

See
Ex. 4
in book

7 Given: Diagram as marked

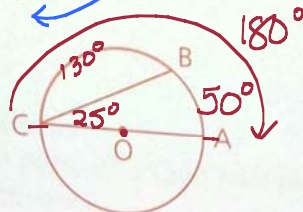
Find: a $m\angle A = 40^\circ$
b $m\angle D = 40^\circ$



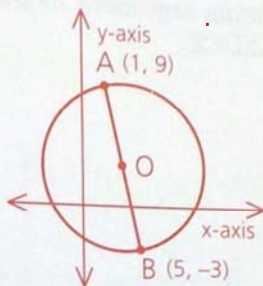
Vertex $\angle$ is ON $\odot$ THEN $\frac{1}{2} \angle = \angle$

8 In $\odot O$, $m\widehat{AB} = 50$. Find $m\widehat{BC}$ and $m\angle BCA$.

$$\begin{array}{r} 180 \\ - 50 \\ \hline 130 \end{array}$$

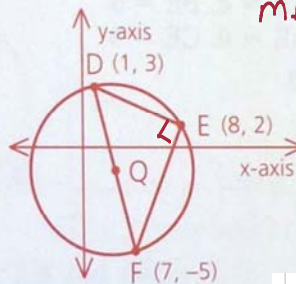


9 In the figure shown, $\overline{AB}$ is a diameter. Find the coordinates of point O, the center of the circle.



10 Find the coordinates of Q, the center of the circle. Then use slopes to show that $\triangle DEF$ is a right triangle.

$$M_{DF} = \left(\frac{1+7}{2}, \frac{3+(-5)}{2} \right) = (4, -1)$$



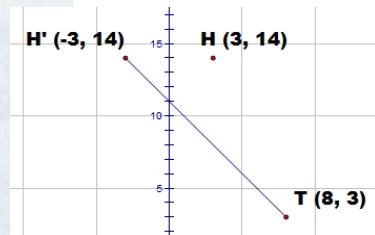
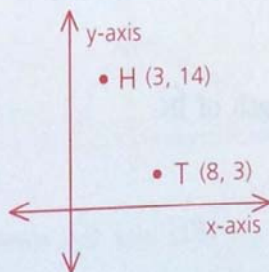
$$m_{DE} = \frac{\Delta y}{\Delta x} = \frac{3-2}{1-8} = -\frac{1}{7}$$

$$m_{EF} = \frac{\Delta y}{\Delta x} = \frac{2+5}{8-7} = 7$$

Slopes are opp & recip. $\therefore \perp$.
 $\perp \Rightarrow \text{rt } \angle$

11 Copy the diagram, reflecting H across the y-axis to H'. Then find

- The coordinates of H'
- The slope of $\overleftrightarrow{TH'}$

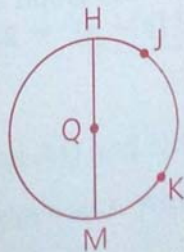


$$m_{H'T} = \frac{14-3}{-3-8} = \frac{11}{-11} = -1$$

Problem Set B

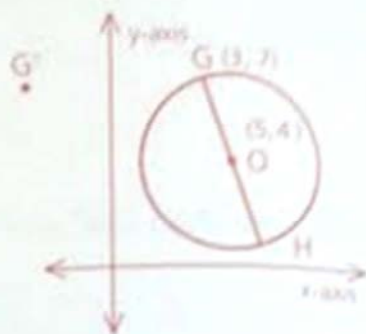
12 In $\odot Q$, $m\widehat{HJ} = 20$ and $m\widehat{MK} = 40$. The circumference of $\odot Q$ is 27π .

- Find $m\widehat{JK}$.
- Find the length of $\widehat{JK}$.
- Find HM (the length of $\overline{HM}$).

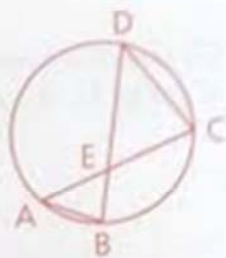


Problem Set B, continued

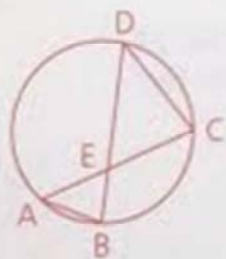
- 13 Use the diagram of $\odot O$ to find the coordinates of H. Then find the coordinates of G' , the reflection of G over the y-axis.



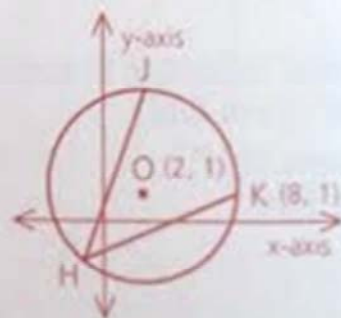
- 14 Write a convincing argument to show that $\triangle ABE \sim \triangle DCE$.



- 15 Given: $AB = 4$, $BE = 5$,
 $AE = 6$, $CE = 3$
 Find: CD



- 16 In the diagram of $\odot O$ at the right,
 $\angle JHK = 45^\circ$.
 a Find $m\widehat{JK}$.
 b Find the length of $\widehat{JK}$.



- 17 Verify by substitution that point $A = (5, 8)$ is on the circle that is the graph of the equation $(x - 2)^2 + (y - 4)^2 = 25$.

