7.7 Circle arc measures and lengths

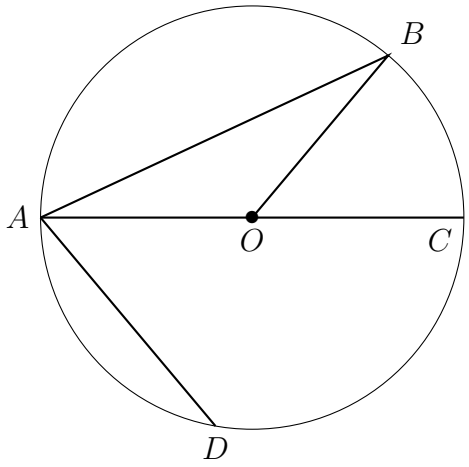
1. Do Now: What is the equation of a circle with center $(-2, 5)$ and radius $r = 4$?

   Graph the circle in Graspable Math or Geogebra and paste the image here.

2. Do Now: What are the coordinates of the center and the length of the radius of the circle whose equation is $(x-7)^2+(y+1)^2=9$?

   Graph the circle in Graspable Math or Geogebra and paste the image here.

3. Given circle O with various internal line segments as shown.



(a) Highlight each radius in red

(b) Highlight any chords in yellow

(c) Is the $\angle CAD$ an inscribed angle or a central angle?

(d) Is $\triangle AOB$ an equilateral triangle, isosceles triangle, or a scalene triangle?

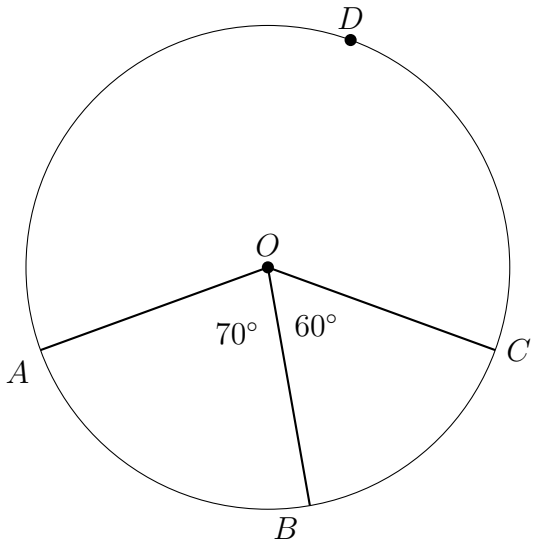
4. Given circle O with points on the circle A, B, C, D as shown. Find each central angle measure.

   (a) $m\angle AOB =$

   (b) $m\angle BOC =$

   (c) $m\angle AOC =$

   (d) What is the measure of the *reflex angle* $m\angle AOC =$, i.e. the one containing point D that is $> 180°$



5. Lesson: Any portion of the circumference of a circle is called an *arc* and written $\overset{\frown}{AB}$.

   A *sector* is part of a circle ("pie slice") bounded by two radii and an arc.

   (a) Highlight arc $\overset{\frown}{AB}$.

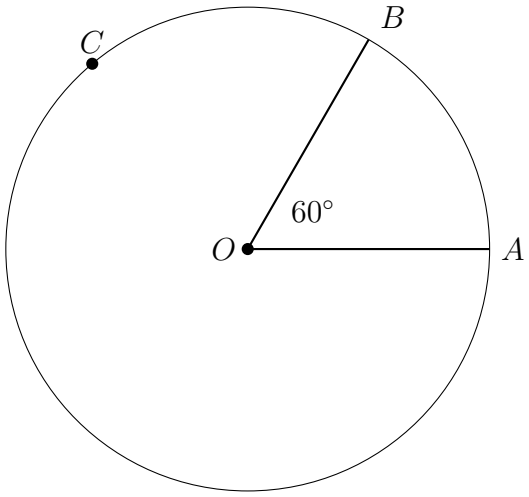
   (b) An arc's degree measure equals its corresponding central angle measure.

   If $m\angle AOB = 60°$, what is the $m\overset{\frown}{AB}$?

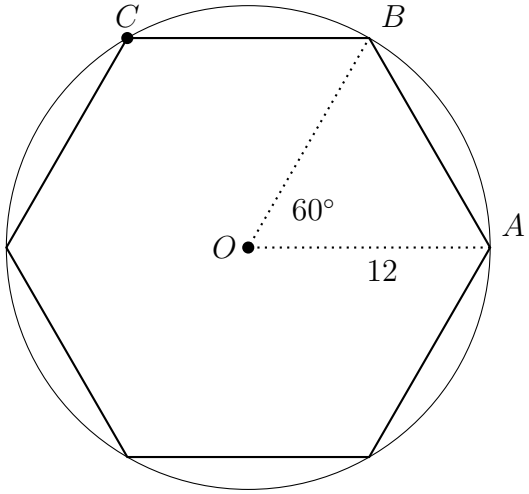
   (c) A *semicircle* is half of a circle.

   (d) An arc smaller than half a circle is a *minor* arc, one larger is a *major* arc.

   Which is a major arc, $\overset{\frown}{AB}$ or $\overset{\frown}{ACB}$?



6. A regular hexagon is inscribed in a circle with a radius $r = 12$, as shown.

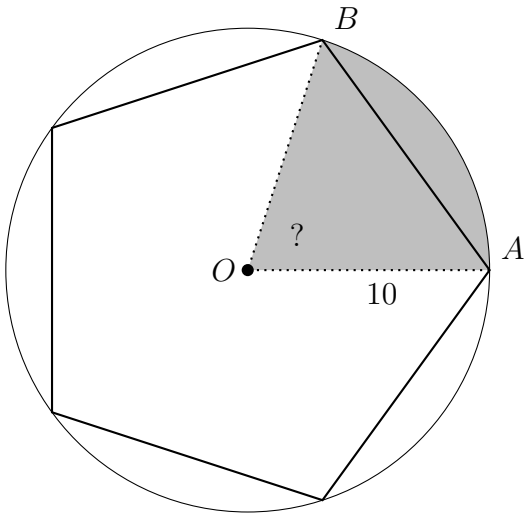


(a) Find the circumference of the circle in terms of π. ($C = 2\pi r$)

(b) How long is the curved part of the circle from point A to B, $\overset{\frown}{AB}$?

(c) What is the degree measure of the arc from point A to C, $m\overset{\frown}{AC}$?

7. A regular pentagon is inscribed in a circle with a radius $r = 10$, as shown.

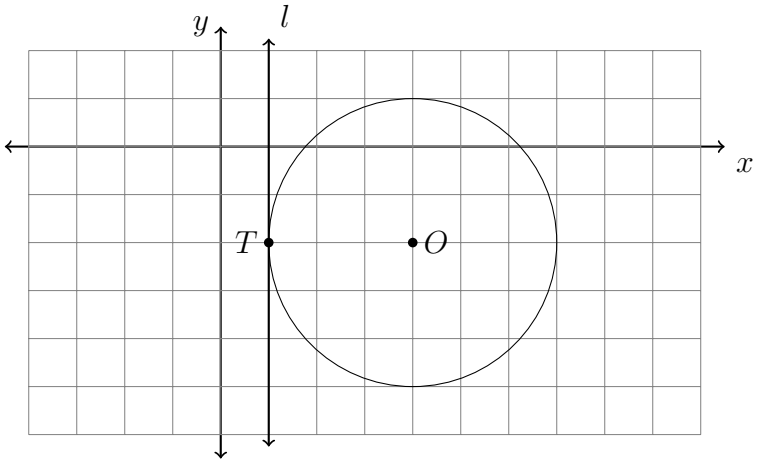


(a) Find the circle's area in terms of π. ($A = \pi r^2$)

(b) What is the degree measure of the central angle $\angle AOB$?

(c) What is the area of the sector bounded by $\overline{AO}$, $\overline{BO}$, and $\overset{\frown}{AB}$?

8. What is an equation of circle O shown in the graph below?



(a) $(x-4)^2+(y+2)^2=9$

(b) $(x-4)^2+(y+2)^2=9^2$

(c) $(x+2)^2+(y-4)^2=9$

(d) $(x+2)^2+(y-4)^2=9^2$

Write down the coordinates of the point of tangency T and the equation of the tangent line l.

9. What are the coordinates of the center and the length of the radius of the circle whose equation is $(x-4)^2+(y+3)^2=16$?

   (a) center $(-4,3)$ and radius 8

   (b) center $(4,-3)$ and radius 4

   (c) center $(-4,3)$ and radius 4

   (d) center $(4,-3)$ and radius 8

10. What is the equation of a circle with center $(5, 0)$ and radius $r = 5$?

    Graph the circle in Graspable Math or Geogebra and paste the image here.

11. Given the diameter of circle C is $\overline{AB}$, $A(3, 2)$ and $B(9, 10)$, find the length of $\overline{AB}$ and hence, the radius of the circle.

    Find the equation of the circle. Graph the circle and its diameter.