

7.7 Circle arc measures and lengths

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

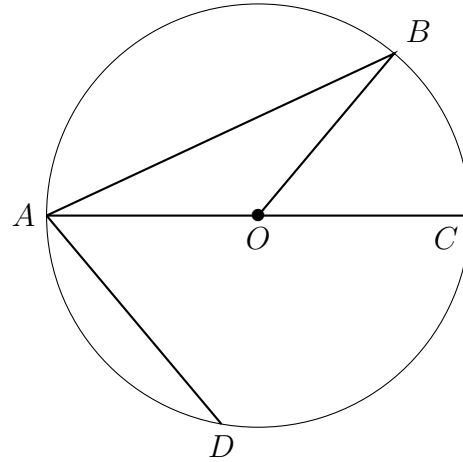
Graph the circle in Graspable Math or Geogebra and paste the image here.

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?



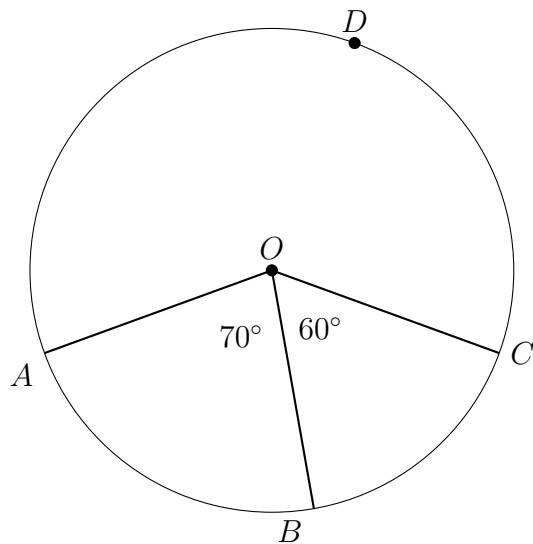
4. Given circle O with points on the circle A, B, C, D as shown. Find each central angle measure.

(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 $> 180^\circ$



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

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

(a) Highlight arc \widehat{AB} .

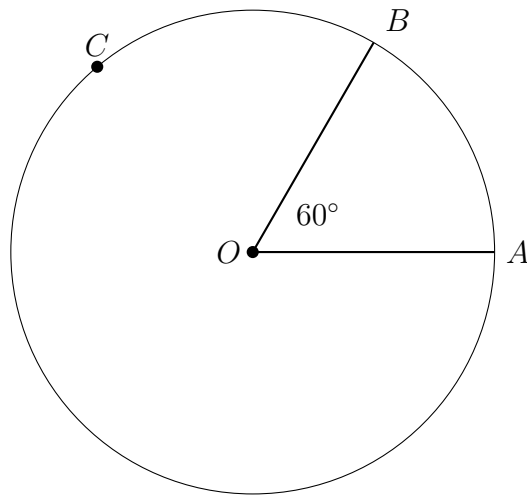
(b) An arc’s degree measure equals its corresponding central angle measure.

If $m\angle AOB = 60^\circ$, what is the $m\widehat{AB}$?

(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, \widehat{AB} or \widehat{ACB} ?

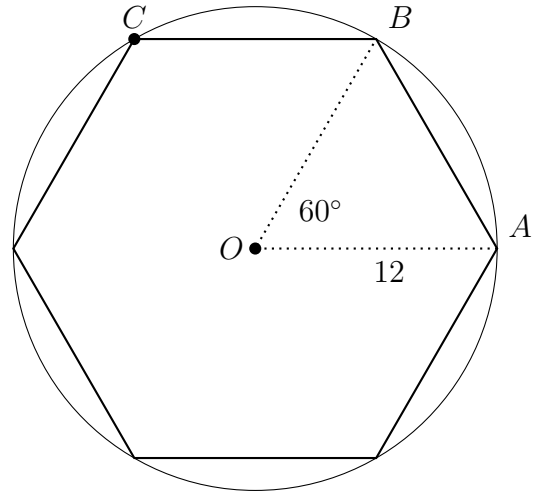


6. A regular hexagon is inscribed in a circle with a radius $r = 12$, as shown.

- (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 , \widehat{AB} ?

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

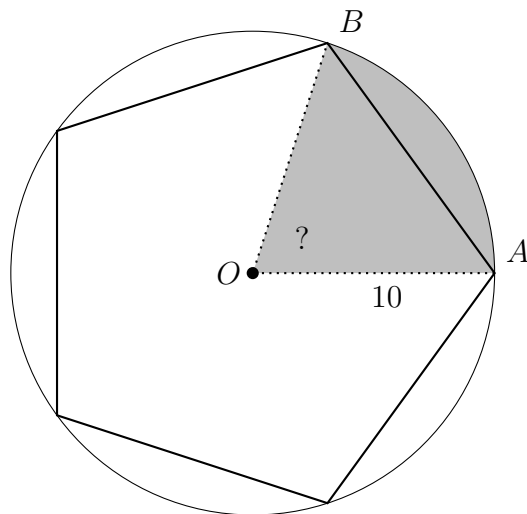


7. A regular pentagon is inscribed in a circle with a radius $r = 10$, as shown.

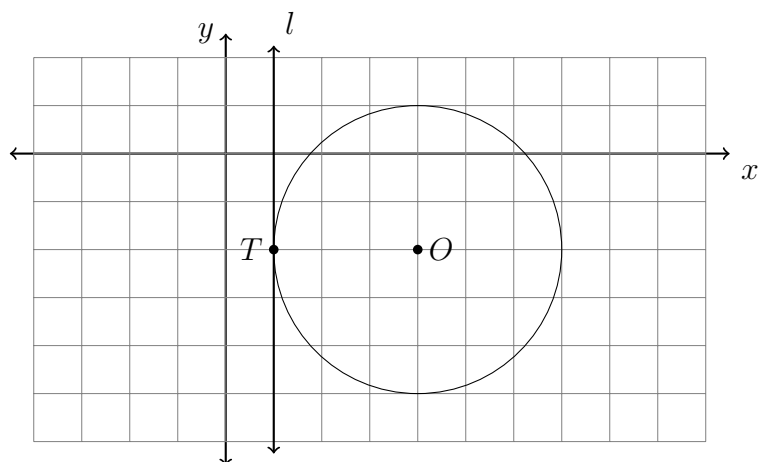
- (a) Find the circle's area in terms of π .
($A = \pi r^2$)

- (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 \widehat{AB} ?



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



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

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

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

(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.