

7.8 Inscribed angle theorem

1. Do Now: A square is inscribed in a circle with a radius $r = 6$. Find each:

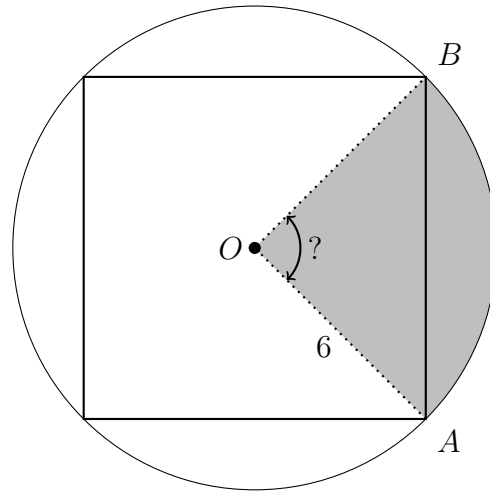
(a) $m\angle AOB$

(b) The circle circumference. ($C = 2\pi r$)

(c) The length of the arc \widehat{AB}

(d) The circle's area. ($A = \pi r^2$)

(e) The sector area (in gray)

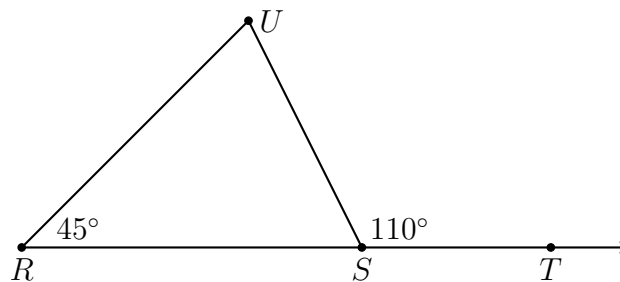


2. Given $m\angle R = 45$ and $m\angle UST = 110$.

(a) Are $\angle RSU$ and $\angle UST$ supplementary, complementary, or neither?

(b) Find $m\angle RSU$.

(c) Find $m\angle U$.



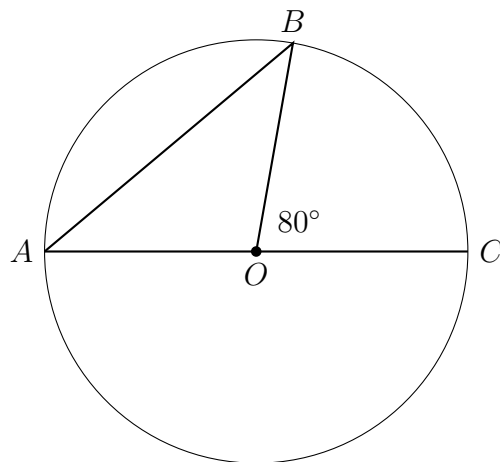
3. Do Now: Given circle O , diameter \overline{AC} , radius \overline{BO} , and central angle $m\angle BOC = 80^\circ$.

(a) How do we know $\overline{AO} \cong \overline{BO} \cong \overline{CO}$?

(b) What is the degree measure $m\widehat{BC}$?

(c) Find $m\angle AOB$.

(d) How do we know $\angle A \cong \angle B$?

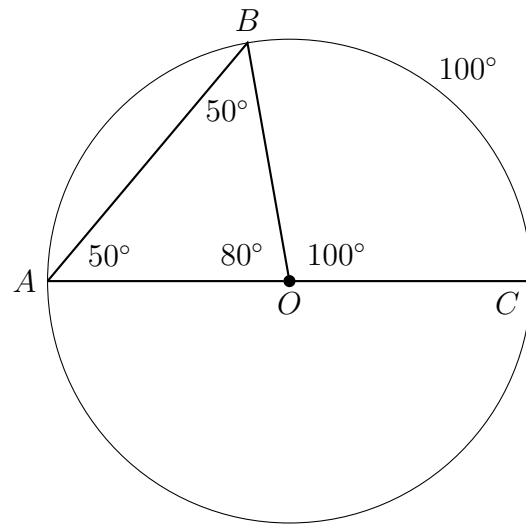


4. Lesson: Given circle O , with inscribed angle $\angle BAC$ and central angle $\angle BOC$ having the same intercepted arc, $m\widehat{BC} = 100^\circ$.

(a) $m\angle BOC = 100^\circ$ and therefore
 $m\angle AOB = 80^\circ$ (linear pair)

(b) $\triangle AOB$ is isosceles therefore
 $m\angle A = m\angle B = 50^\circ$

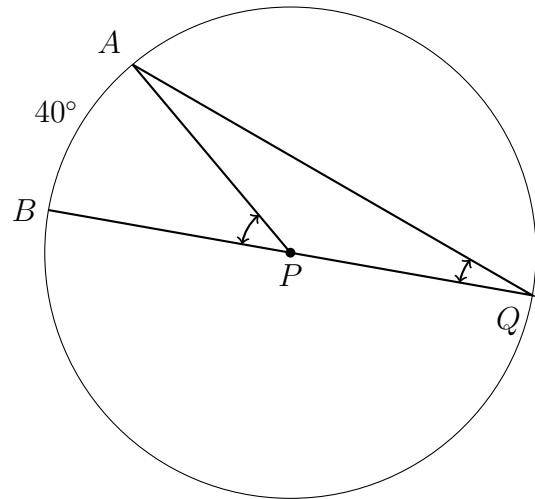
- (c) Theorem:
The measure of an inscribed angle is *half* of the measure of its intercepted arc.



5. Given circle P with $m\widehat{AB} = 40^\circ$.

(a) Write down the $m\angle APB$.

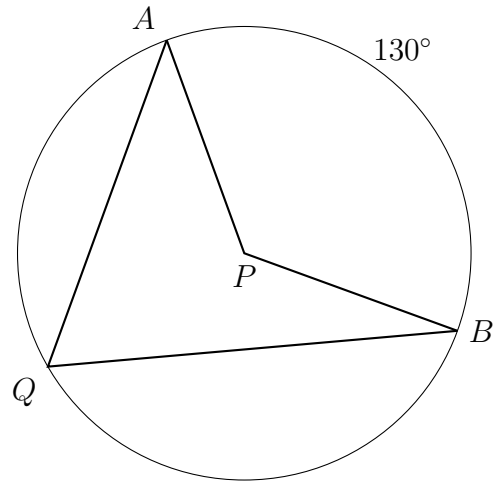
(b) Find the $m\angle AQB$.



6. Given circle P with $m\widehat{AB} = 130^\circ$.

(a) Write down the $m\angle APB$.

(b) Find the $m\angle AQB$.



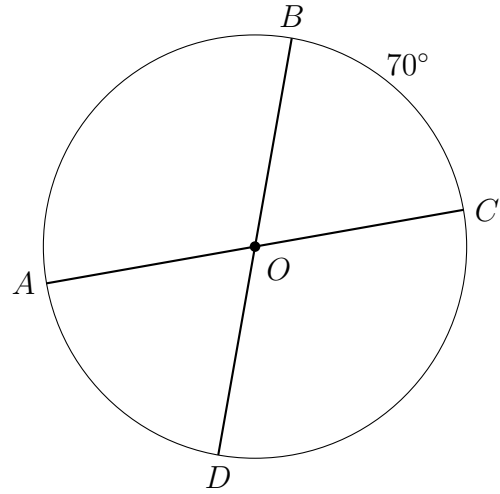
7. Given circle O , diameters \overline{AC} and \overline{BD} , and arc measure $m\widehat{BC} = 70^\circ$.

(a) How do we know $\angle AOD \cong \angle BOC$?

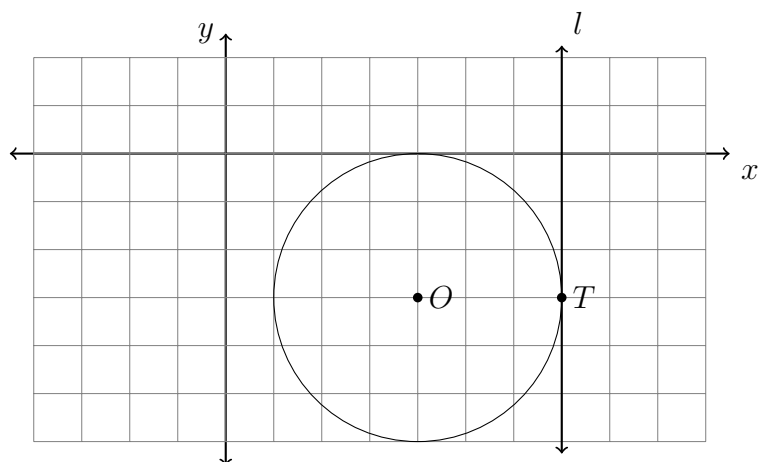
(b) What are the degree measures of $m\angle BOC$ and $m\angle AOD$?

(c) Write down $m\widehat{AD}$.

(d) Find Write down $m\widehat{AB}$



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



(a) $(x - 4)^2 + (y + 3)^2 = 9$

(c) $(x + 2)^2 + (y - 3)^2 = 9$

(b) $(x - 4)^2 + (y + 3)^2 = 9^2$

(d) $(x + 2)^2 + (y - 3)^2 = 9^2$

The circle is tangent to line l and the x -axis. Write down the equations of line l and the x -axis.

9. What is the equation of a circle with center $(3, -2)$ and radius $r = 8$?

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

10. Given the diameter of circle C is \overline{AB} , $A(-2, 2)$ and $B(6, 8)$, 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.