7.8 Inscribed angle theorem

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

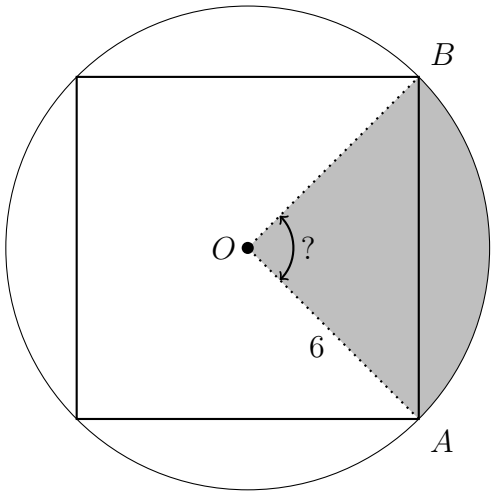
   (a) $m\angle AOB$

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

   (c) The length of the arc $\overset{\frown}{AB}$

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

   (e) The sector area (in gray)

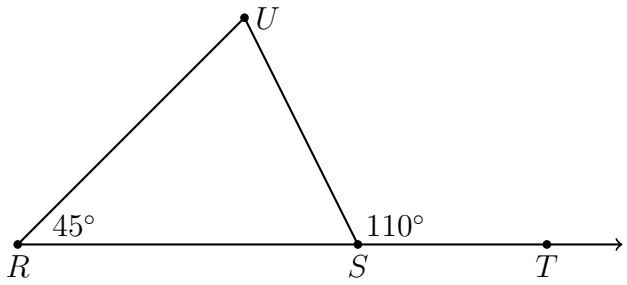


2. Do Now: Given $m\angle R = 45$ and $m\angle UST = 110$.

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

   (b) Find $m\angle RSU$.

   (c) Find $m\angle U$.



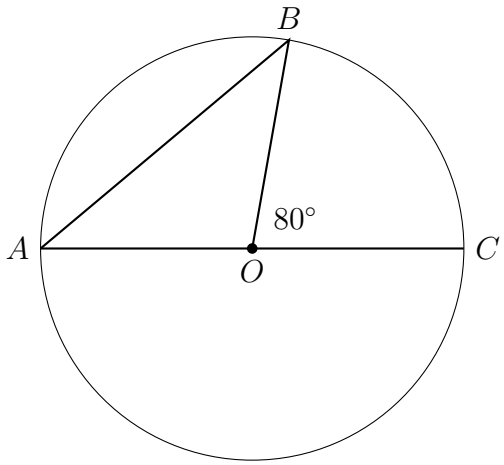
3. Do Now: Given circle O, diameter $\overline{AC}$, radius $\overline{BO}$, and central angle $m\angle BOC = 80°$.

(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 $\angle A \cong \angle B$?

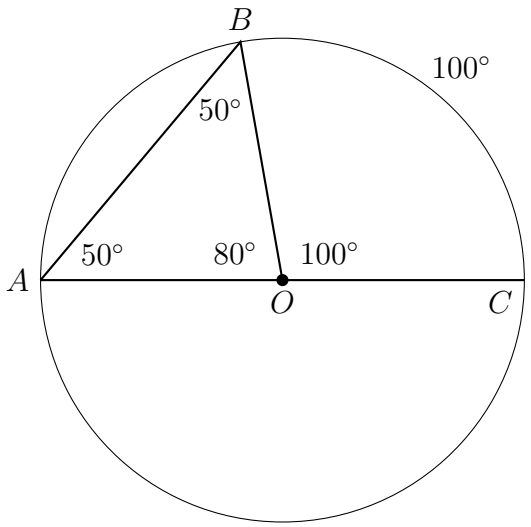


4. Lesson: Given circle O, with inscribed angle $\angle BAC$ and central angle $\angle BOC$ having the same intercepted arc, $m\widehat{BC} = 100°$.

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

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

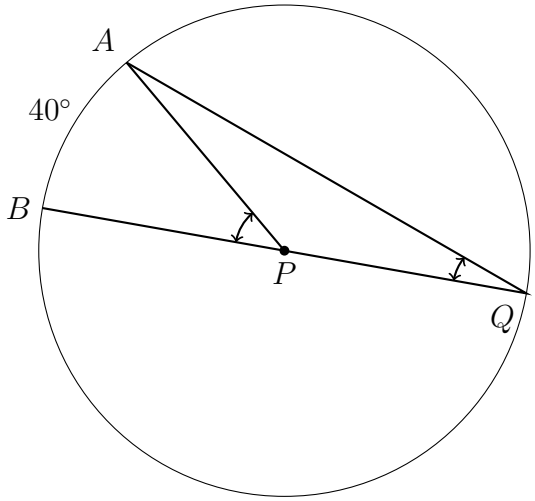
   (c) Theorem:
   The measure of an inscribed angle is *half* of the measure of its intercepted arc.



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

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

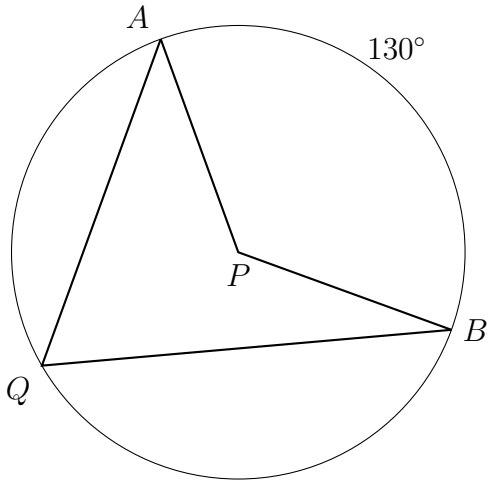
   (b) Find the $m\angle AQB$.



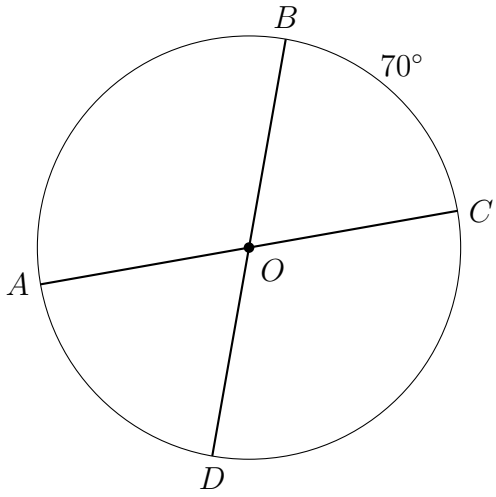
6. Given circle P with $m\widehat{AB} = 130°$.

   (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 $m\widehat{BC} = 70°$.



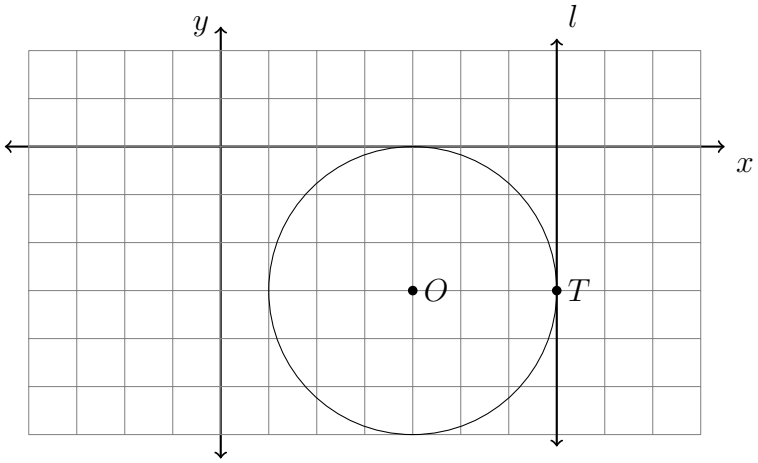
(a) How do we know $\angle AOD \cong \angle BOC$?

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

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

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

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



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

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

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

(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.