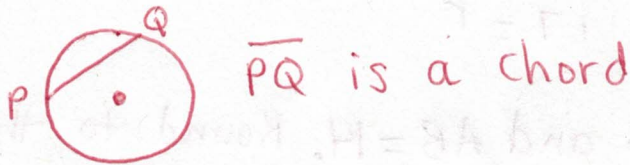


Arc and chords

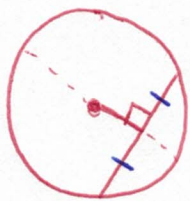
UNIT 6 LESSON _____ INVESTIGATION _____ NOTES

Lesson Vocabulary

Chord - A segment + within a circle whose endpoints are on the circle. A diameter is a chord.

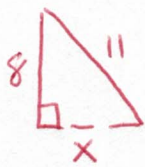
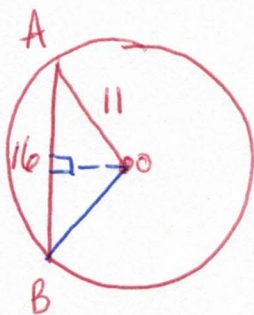


Theorem - A diameter that is perpendicular to a chord, bisects the chord.



This is referred to "the perpendicular from the center to the chord."

ex.) Find the perpendicular distance from the center to the chord and $m\widehat{AB}$ rounded to the nearest tenth.

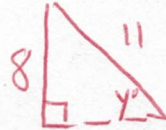


$$x^2 + 8^2 = 11^2$$

$$x^2 + 64 = 121$$

$$x^2 = 57$$

$$x = 7.5$$



$$\sin^{-1}\left(\frac{8}{11}\right)$$

$$y^\circ = 46.7^\circ$$

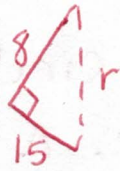
$$\angle AOB = 2(46.7)$$

$$\angle AOB = 93.4^\circ$$

$$\text{so, } \widehat{AB} = 93.4^\circ$$

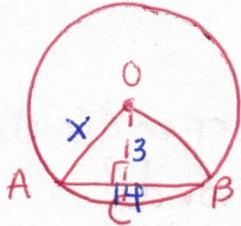
Example Problem(s)

ex.) Find the radius.



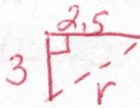
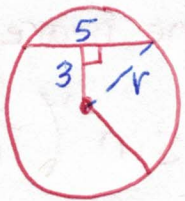
$$\begin{aligned} 8^2 + 15^2 &= r^2 \\ 64 + 225 &= r^2 \\ 289 &= r^2 \\ 17 &= r \end{aligned}$$

ex.) Find OA if OC = 3 and AB = 14. Round to the nearest tenth.



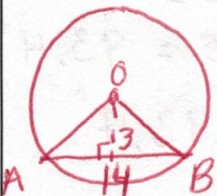
$$\begin{aligned} 3^2 + 7^2 &= x^2 \\ 9 + 49 &= x^2 \\ 58 &= x^2 \\ 7.6 &= x \end{aligned}$$

ex.) Find the radius if the perpendicular distance from the center to the chord is 3 and the chord length is 5. Round to the nearest tenth.



$$\begin{aligned} 3^2 + 2.5^2 &= r^2 \\ 9 + 6.25 &= r^2 \\ 15.25 &= r^2 \\ 3.9 &= r \end{aligned}$$

ex.) Find the central angle.



$$\begin{aligned} \tan^{-1}\left(\frac{7}{3}\right) \\ x^\circ &= 66.8^\circ \\ \angle AOB &= 2(66.8) \\ \angle AOB &= 133.6^\circ \end{aligned}$$