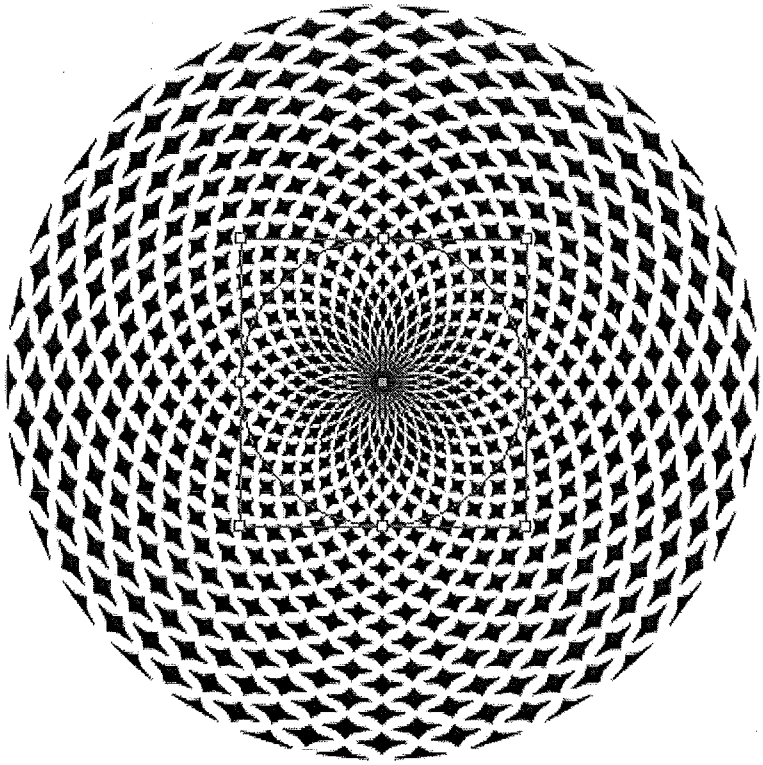
Math 9
Chapter 9 Circle Geometry

Notes



Math 9 Geometry Introduction Name: _____

There are four different kinds of angles. Can you name them and draw them?

Name	Sketch	Explanation

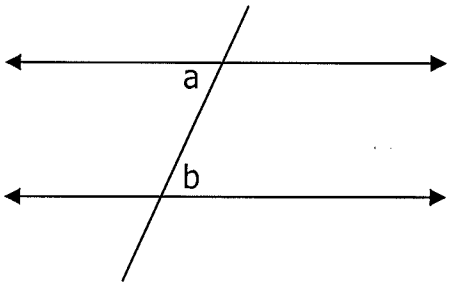
There are five important rules that relate lines to each other
Name them, then sketch and explain them

Name	Sketch	Explanation

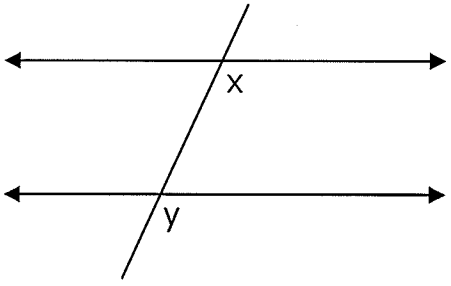
There are four different kinds of triangles. Can you identify them?

Name	Sketch	Explanation

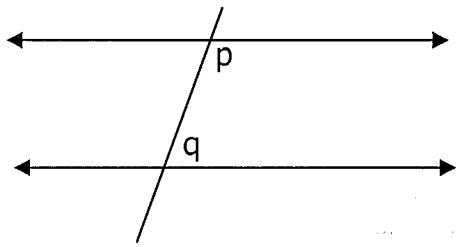
Parallel Lines create some useful geometry rules, when they are intersected by a line called a TRANSVERSAL



Angles a and b are a pair of ALTERNATE INTERIOR ANGLES. Can you find another pair? Look for the 'Z' shape $\angle a = \angle b$



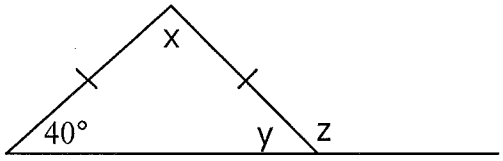
Angles x and y are a pair of equal CORRESPONDING ANGLES. How many other pairs are there? $\angle x = \angle y$
Look for the 'F' shape

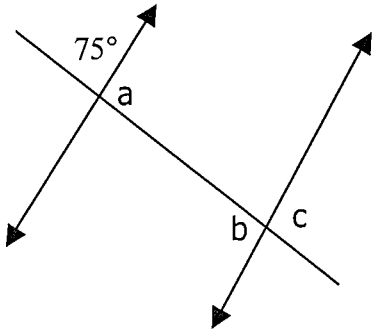


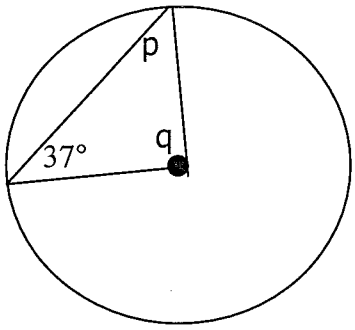
Angles p and q are called CO-INTERIOR ANGLES.
They add to $180°$ ($\angle p + \angle q = 180°$)
Is there another pair? Look for the 'C' shape

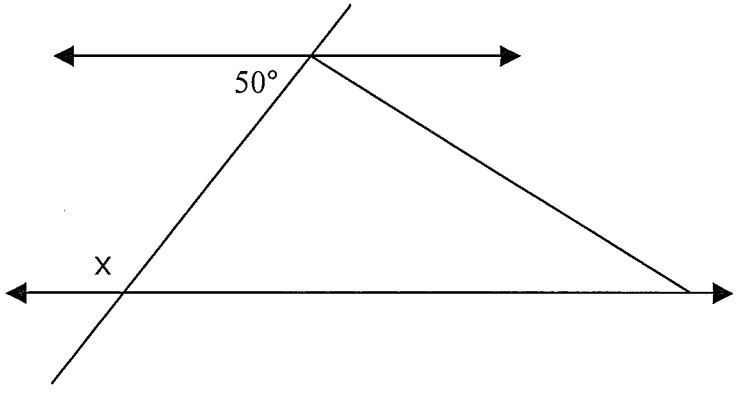
What can you remember about Quadrilaterals? How many types are there?

Practice. Find the missing angles and give the best reason.







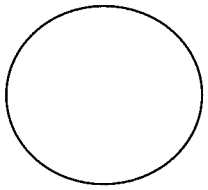


Math 9 The Chord Property Name:

Definitions:

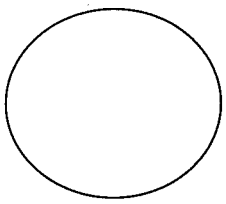
Circle

Radius

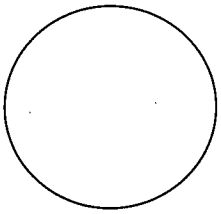


Perpendicular: Midpoint: Bisect:

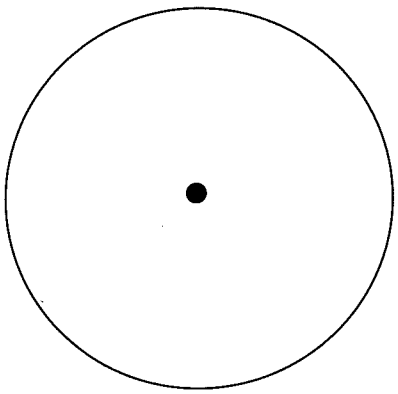
Chord:



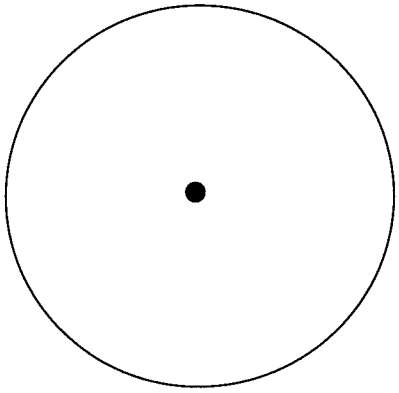
Arc:



Draw a chord AB on this circle. Connect the midpoint M of the chord to the center O. Measure $\angle OMA$ and $\angle OMB$. Record your result

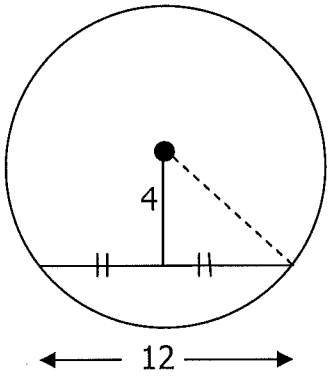


Draw a different length chord CD, in a different location. Draw a segment from the centre to the chord at right angles to the chord. Label the point where they intersect M. Measure CM and DM. What did you find?

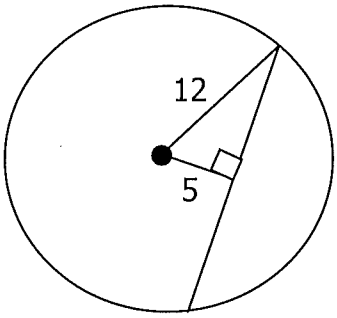


Practice:

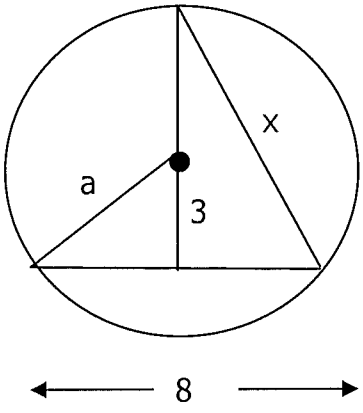
Find the length of the radius.



Find the length of the chord

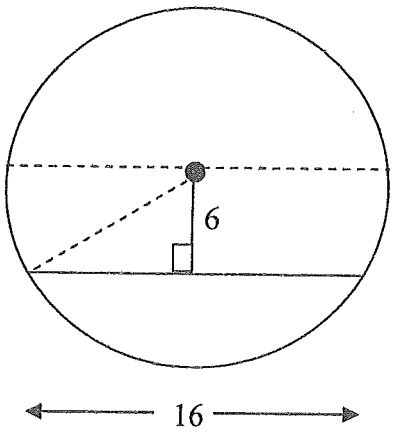


Find the value of x



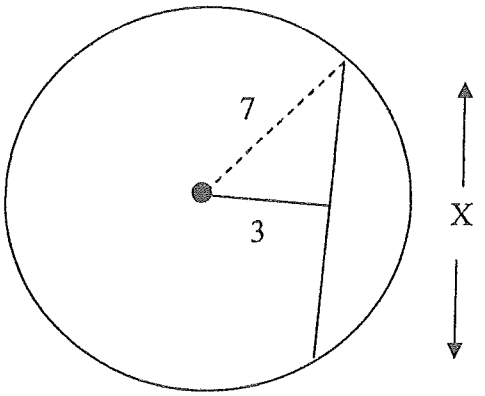
Math 9 Chord Property Review

1)



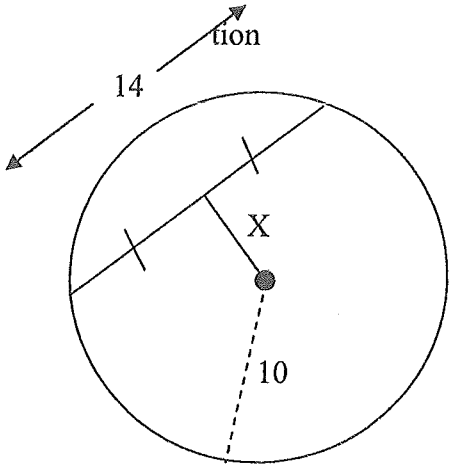
Find the length of the diameter
HINT: Find the radius first

2)



Find the length of the chord
HINT: Find half of the chord first

3)



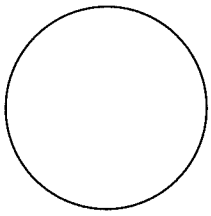
Find the length of X
HINT: Create a right triangle

4) A cylindrical pipe has a circular cross section. The water at the bottom of the pipe is 20 cm wide. The water is 5 cm from the center of the pipe. What is the diameter of the pipe?

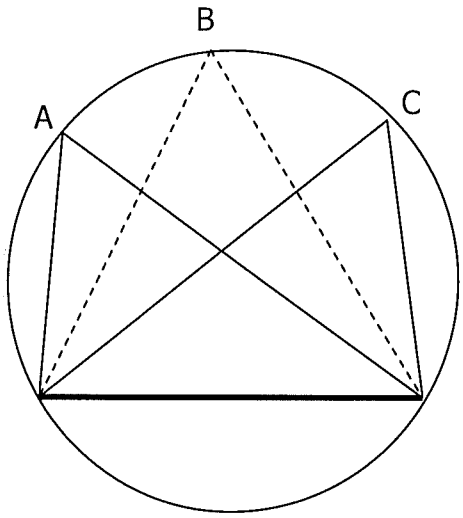
5)A road underpass is shaped as a circle. The underpass has a radius of 5 feet, while the pathway inside is 4 feet wide. What is the maximum height of the underpass?

Math 9 Inscribed Angles Name:

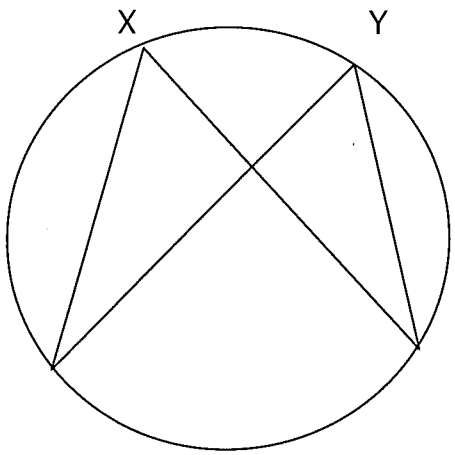
Definitions: Inscribed angle:



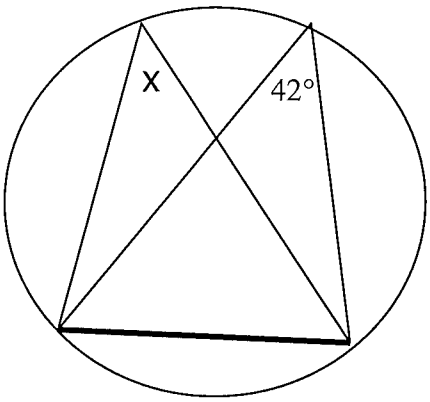
Three hockey players face the net in a circular rink. Which player has the best angle at which to shoot?

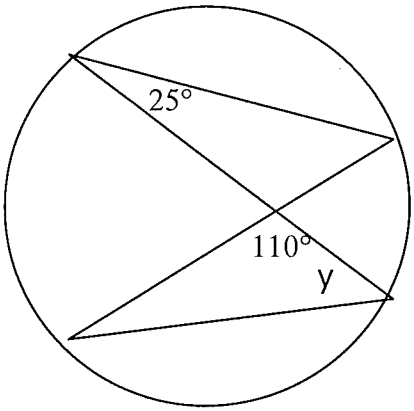


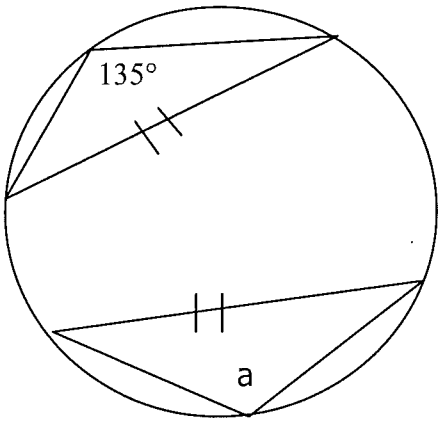
Measure the inscribed angles X and Y. What can you conclude?



Practice:

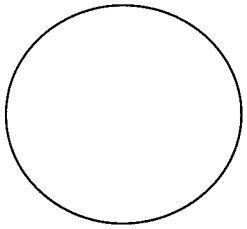






Math 9 Central Angle Notes Name: _____

Definition: Central Angle

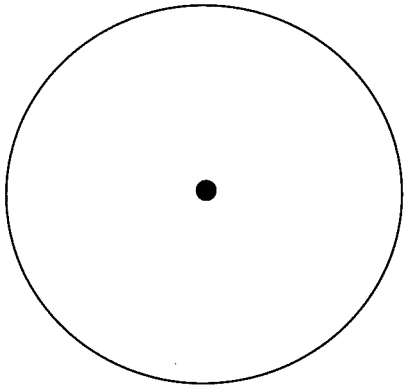


Draw two equal chords, one on either side of the circle. Label them AB and CD. Label center as O. Create central angles $\angle AOB$ and $\angle COD$ by joining A and B to O. and C and D to O.

Measure $\angle AOB$ and $\angle COD$. What is your conclusion?

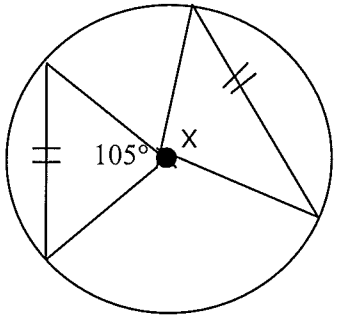
$\angle AOB =$ $\angle COD =$

Conclusion:

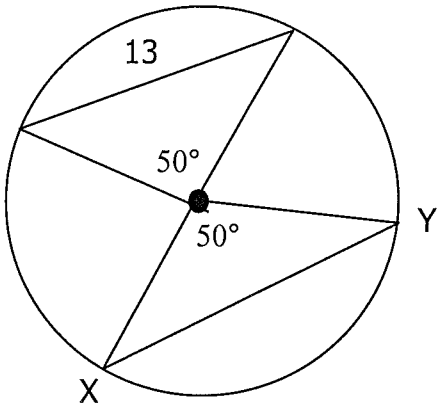


Practice:

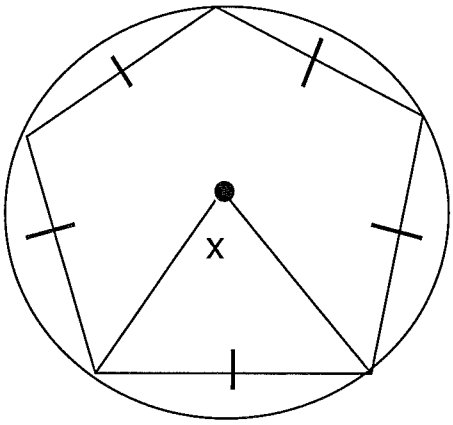
1. Find the measure of x



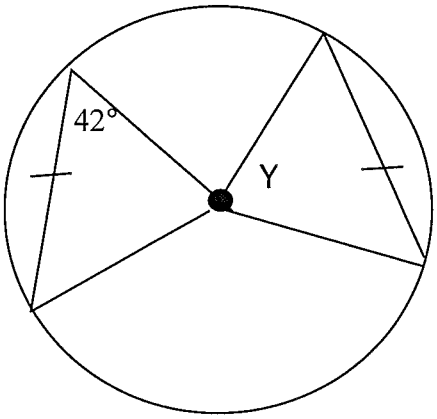
Find the length of chord XY



Find the measure of X



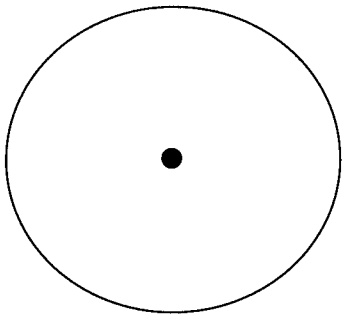
Find the measure of Y



Math 9 Central/Inscribed Property Name:

This lesson is designed to discover the relationship between and central and an inscribed angle

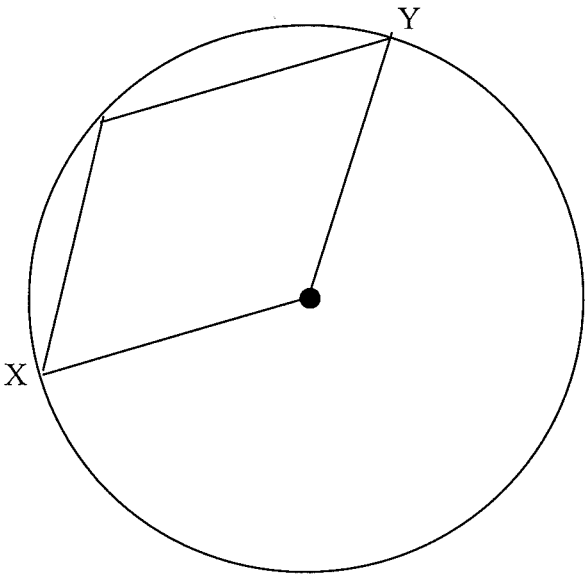
Draw chord AC. Draw inscribed angle ABC. Draw central angle AOC.
Measure $\angle ABC$ and $\angle AOC$. Record your results.



$\angle ABC =$ _____ $\angle AOC =$ _____

Conclusion:

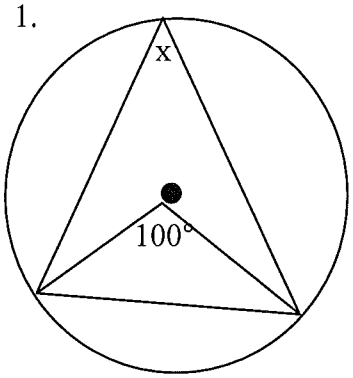
Repeat this experiment using an arc XY.



Do you have the same result?

Practice:

1.



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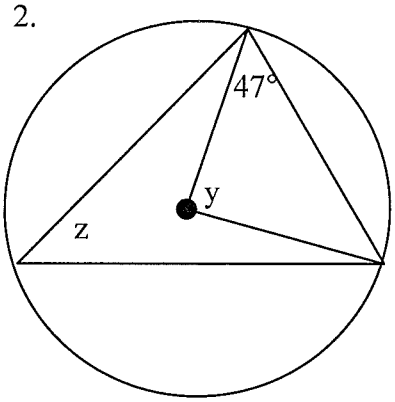

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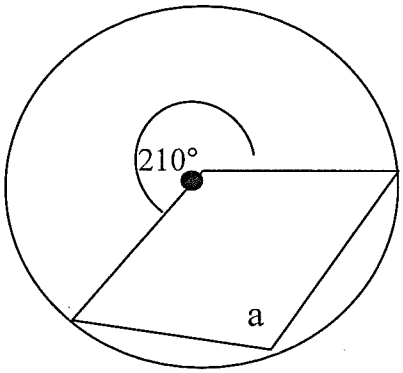

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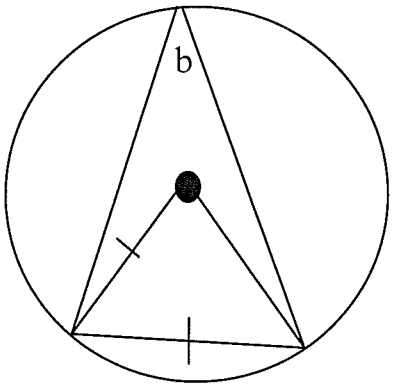

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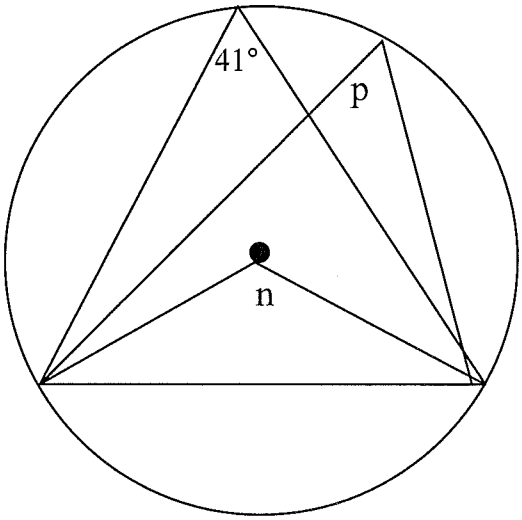
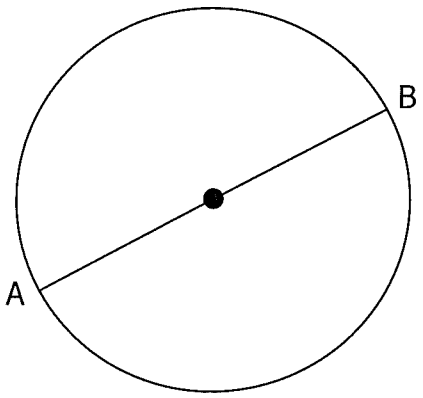


Math 9 Semi-Circle Property Name:

In this lesson we will explore the properties of an inscribed angle covered by the diameter

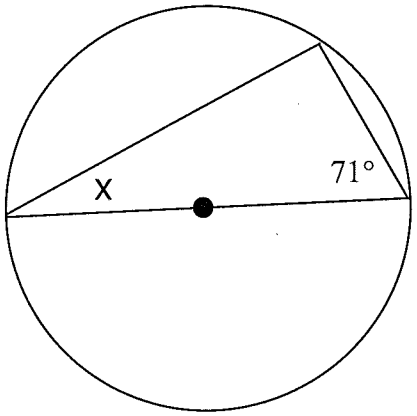
Draw inscribed angle APB. Measure and record $\angle APB$ $\angle APB =$ _____

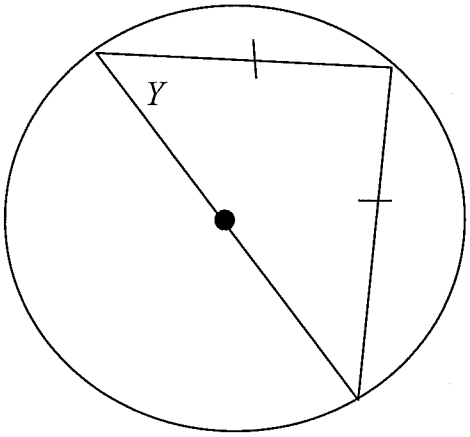


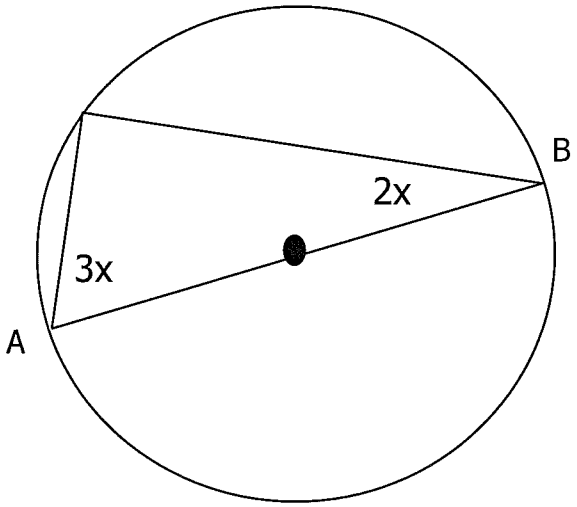
Draw inscribed angle AQB. Measure and record $\angle AQB$ $\angle AQB =$ _____

Conclusion:

Practice:



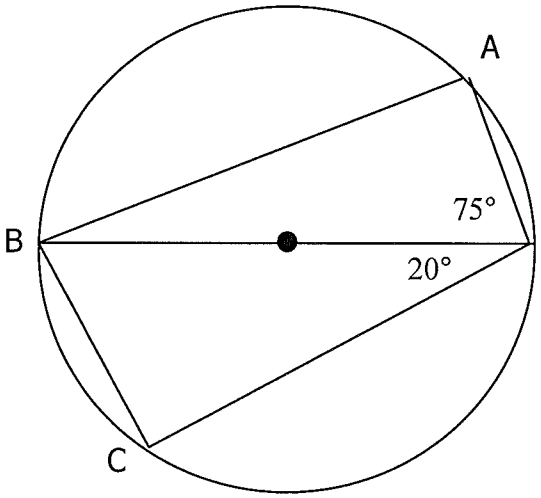




X = _____

$\angle A$ = _____

$\angle B$ = _____

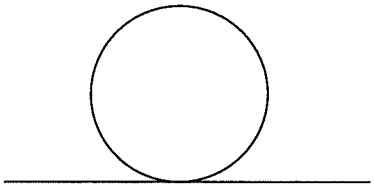


$\angle ABC$ = _____

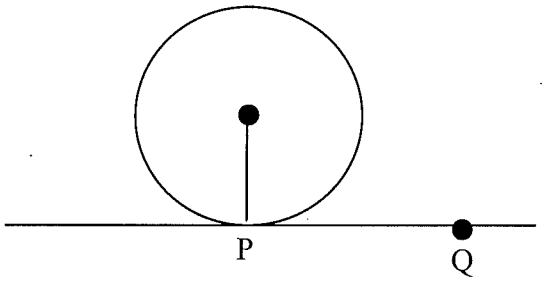
Ma 9 Tangent Radius Property Name:

Goal is to explore the relationship between a tangent and its radius

Definition: A tangent is a



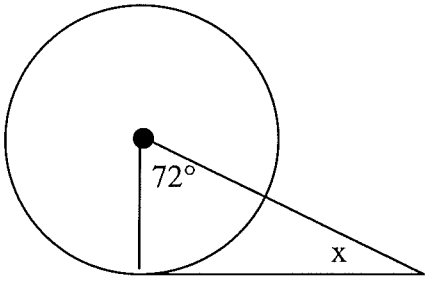
Draw a segment joining the center with the point of tangency. Measure angle OPQ

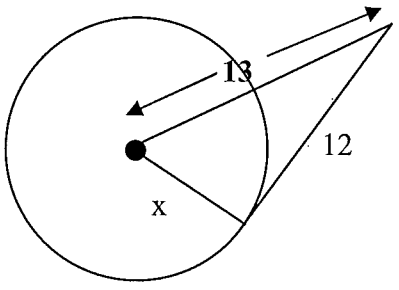


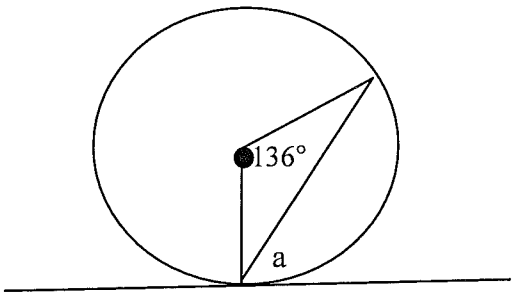
$\angle OPQ =$_____

Conclusion:

Practice:



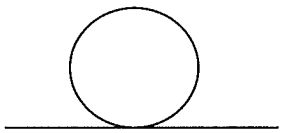



136°
a

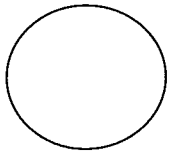
Math 9 Tangents from an External Point Name:

The goal is to explore the relationship between tangents drawn to a circle

Remember---A tangent is a line that intersects a circle once

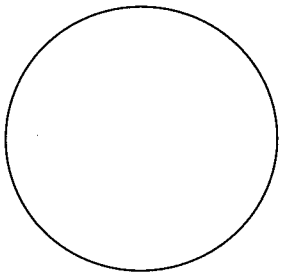


How many tangents can be drawn to a circle from point P?



P

Draw tangents from point P to the circle. Label the points of tangency as A and B. Measure the lengths of PA and PB. Record the result. What is your conclusion?



P

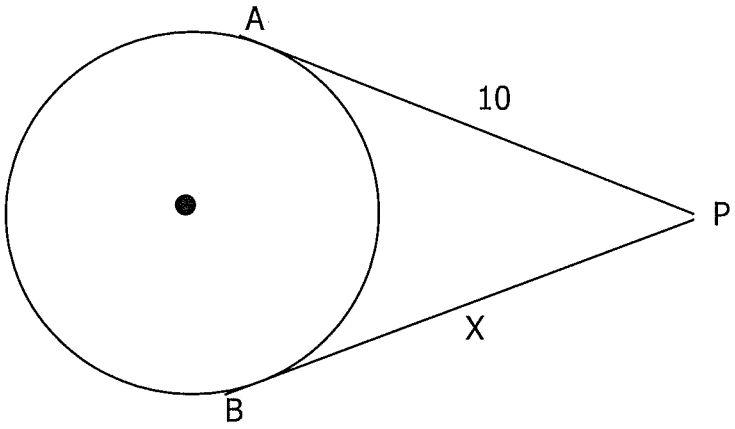
PA = _____

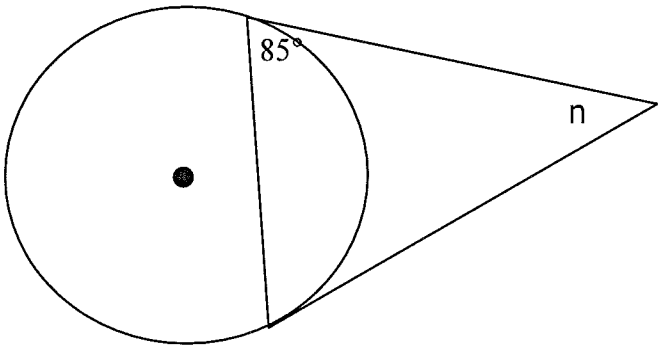
PB = _____

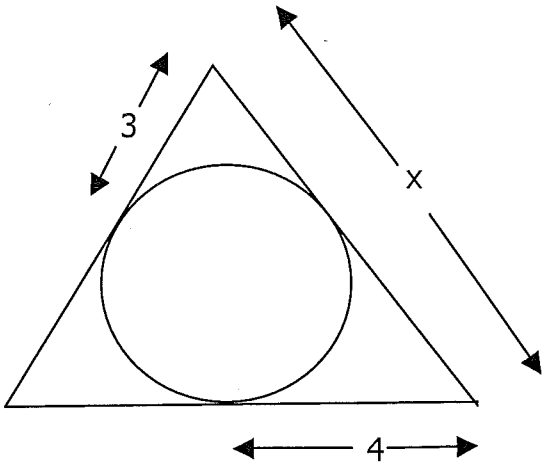
Conclusion:

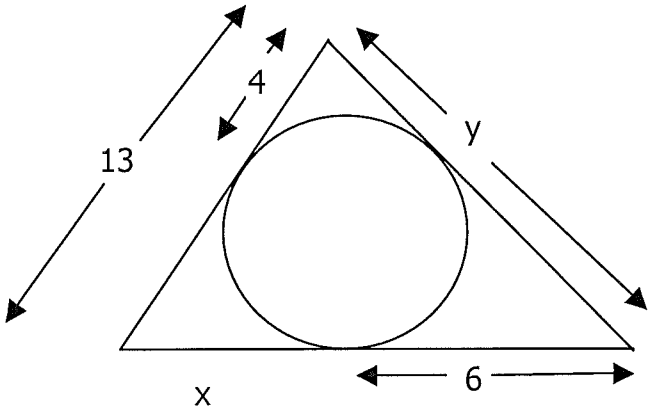
Equal Tangents Property:

Practice:







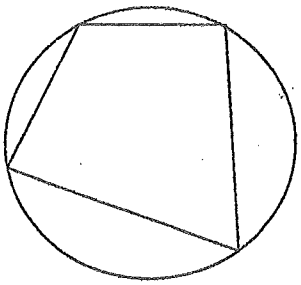


Perimeter =

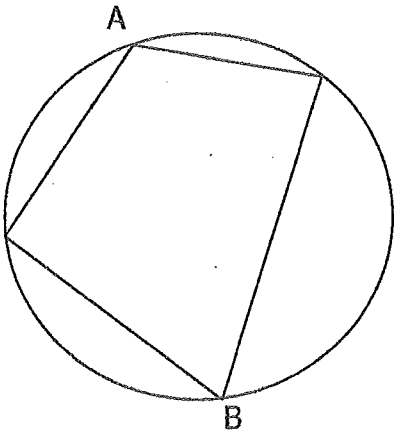
Math 9 Cyclic Quadrilateral Name:

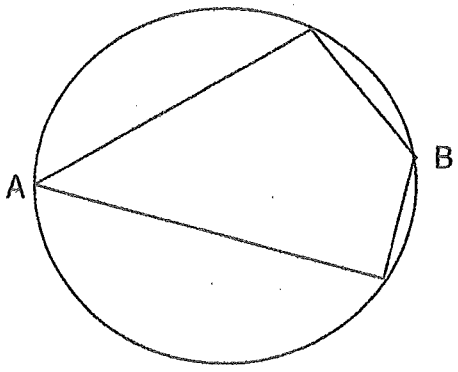
The goal is to explore the angles in a Cyclic Quadrilateral

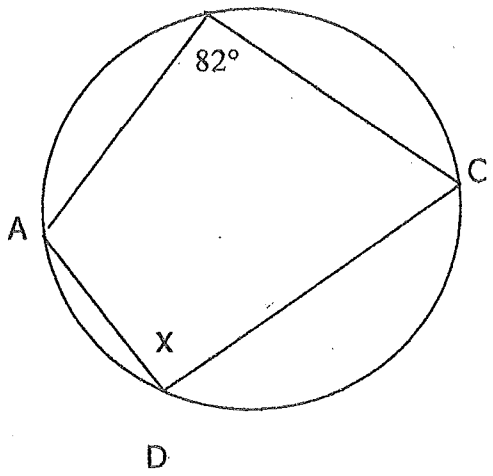
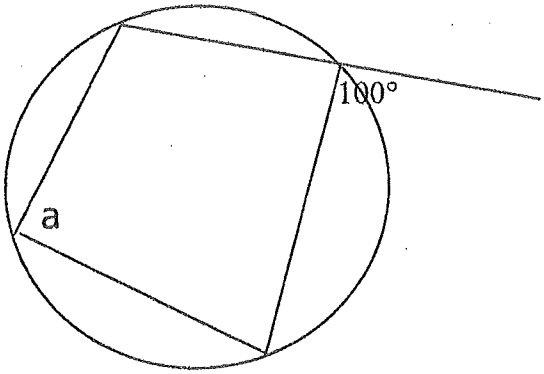
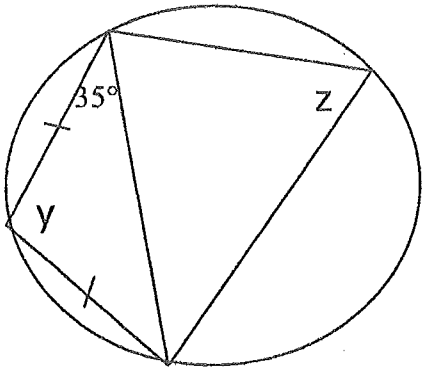
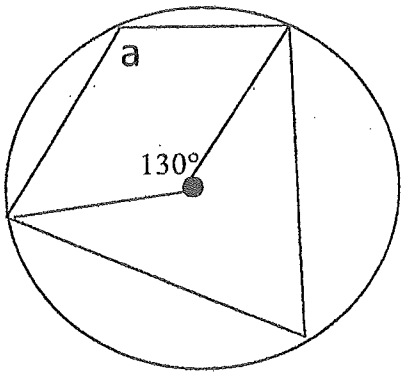
Definition: A Cyclic Quadrilateral is:



Measure angles A and B. Record your results





Cyclic Quadrilateral Property:

Practice: