

Lab #1

Objective: Using the 72 point geoboard, investigate, write, and prove your hypothesis

THE CENTRAL ANGLE THEOREM

- Procedure: 1.) Arrange your rubber band to create a central angle on your geoboard.
2.) Measure the arc length (in degrees) and measure the central angle.
3.) Record the measurements for yourself and your classmates in the table below.

Name	Central Angle Measure (in degrees)	Arc Measure (in degrees)

Theory Statement (in your words):

If _____,

then _____

Lab #2

THE INSCRIBED ANGLE THEOREM

- Procedure: 1.) Arrange your rubber band to create an inscribed angle.
2.) Measure the arc length (in degrees) and measure the inscribed angle.
3.) Record the measurements for yourself and classmates in the table below.

Name	Inscribed Angle Measure (in degrees)	Arc Measure (in degrees)

Theory Statement (in your words):

If _____,
then _____

Lab #3

THE INSCRIBED TRIANGLE (WITH A DIAMETER AS A SIDE) THEOREM

- Procedure: 1.) Arrange your rubber band to create a diameter.
2.) Pull one side of the rubber band to create an inscribed triangle (with the diameter as one side of the triangle).
3.) Measure all three angles of the inscribed triangle.
4.) Record the measurements for yourself and your classmates in the table below.

Name	Angle #1	Angle #2	Angle #3

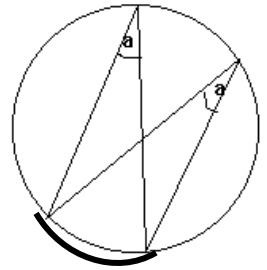
Theory Statement (in your words):

If _____,

then _____

Lab #4

ANGLES SUBTENDED ON THE SAME ARC THEOREM



- Procedure: 1.) Arrange your rubber band to resemble the picture to the right.
2.) Measure the arc length (in degrees) and measure the two inscribed angles.
3.) Record the measurements for the entire class in the table below.

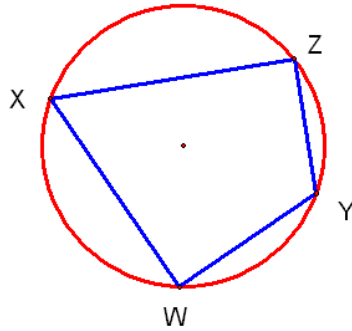
Name	Angle A	Angle B	Arc Measure (in degrees)

Theory Statement (in your words):

If _____,

then _____

Lab #5



OPPOSITE ANGLES IN A INSCRIBED QUADRILATERAL THEOREM

- Procedure: 1.) Arrange your rubber band to create an inscribed quadrilateral.
2.) Measure the four angles in your quadrilateral.
3.) Focus your attention on angles that are opposite from each other.
4.) Record the measurements for the entire class in the table below.

Name	Angle X	Angle Y	Angle W	Angle Z

Theory Statement (in your words):

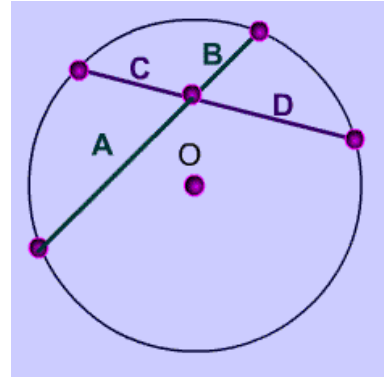
If _____,

then _____

Lab #6

Objective: Define and describe the following theorems:

- 1.) Intersecting Chords Theorem
- 2.) Congruent Chords in a Circle Theorem



Intersecting Chords Theorem

- Procedure:
- 1.) Arrange your rubber band to create two chords
 - 2.) Measure the length of the chord from start to intersection point.
 - 3.) Record the measurements for yourself and your classmates.

Name	A	B	C	D	(A)(B)	(C)(D)

Theory Statement (in your words):

If _____,

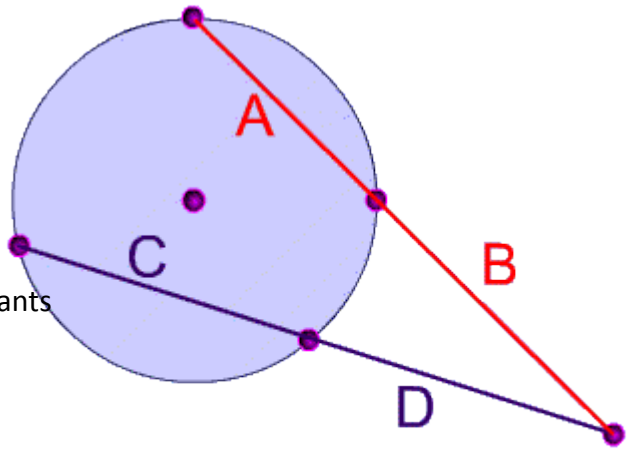
then _____

Lab #7

Objective: Define and describe the following theorems:

Two Secants Intersecting

- 1.) Arrange your rubber band to create two secants
- 2.) Measure the lengths of A, B, C, and D.
- 3.) Fill out the following table.



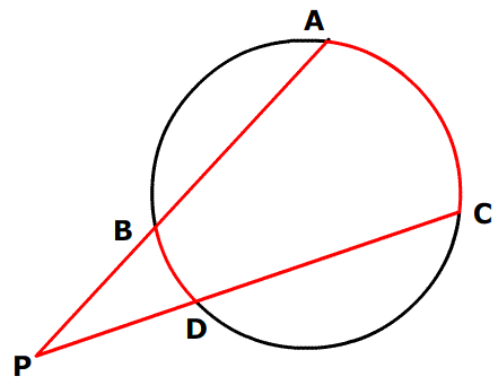
Name	A	B	C	D	$(A + B)B$	$(C + D)D$

Theory Statement (in your words):

If _____,

then _____

Lab #8



Objective: Define and describe the following theorems:

Two Secants Intersecting (Looking at arcs)

- Procedure: 1.) Arrange your rubber band to create two secants
2.) Measure Arc AC
3.) Measure Arc BD
4.) Measure Angle P

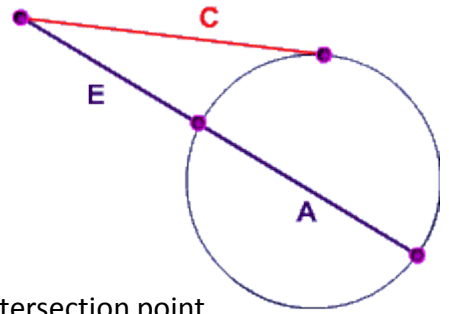
Name	Arc AC	Arc BD	Angle P	$\frac{1}{2}(AC - BD)$

Theory Statement (in your words):

If _____,

then _____

Lab #9



SECANT/TANGENTS

- Procedure: 1.) Arrange your rubber band to create two chords
2.) Measure the length of the chord from start to intersection point.
3.) Record the measurements for yourself and your classmates.

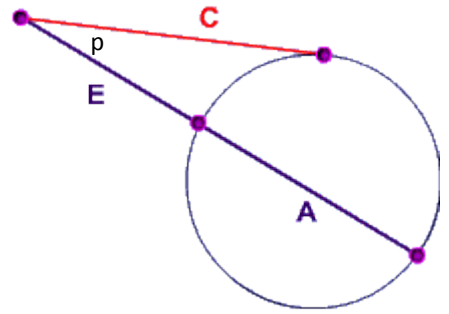
Name	C	A	E	C^2	$E(A+E)$

Theory Statement (in your words):

If _____,

then _____

Lab #10



Two Secants Intersecting (Looking at arcs)

- Procedure: 1.) Arrange your rubber band to create two secants
 2.) Measure Arc AC
 3.) Measure Arc CE
 4.) Measure Angle P

Name	Arc AC	Arc CE	Angle P	$\frac{1}{2}(AC - CE)$

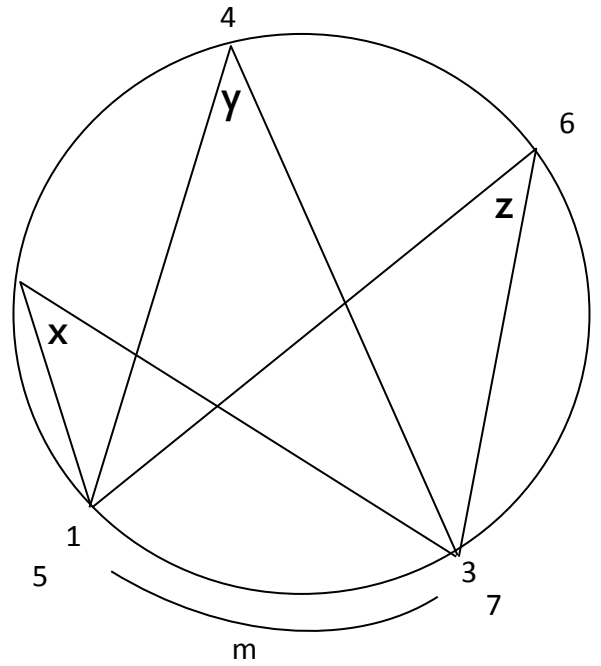
Theory Statement (in your words):

If _____,
 then _____

Lab #11

Angles that subtend the same arc

- Procedure: 1.) Arrange your string/rubber band to resemble the picture.
 2.) Measure the angles x , y , and z .
 3.) Record the measurements for yourself and your classmates.



Name	x	y	z	Arc m

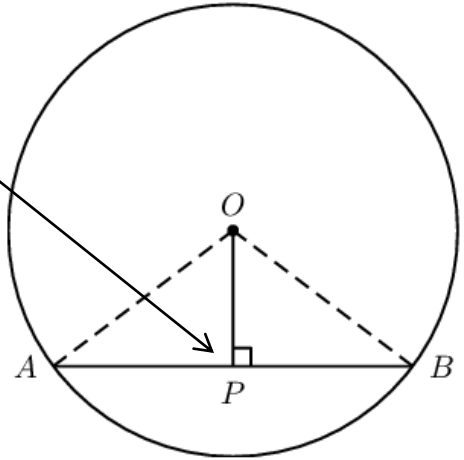
Theory Statement (in your words):
 If _____,
 then _____

Lab #12

Perpendicular line from circle center bisects chord

Procedure:

- 1.) Arrange the rubber band/String to resemble the picture, **You must use your protractor to create a 90 degree angle
- 2.) Use your ruler to measure AP (use centimeters)
- 3.) Use your ruler to measure PB (use centimeters)
- 4.) Write your first theory statement based on your results.



Name	AP	PB

Theory Statement (in your words):

If _____,

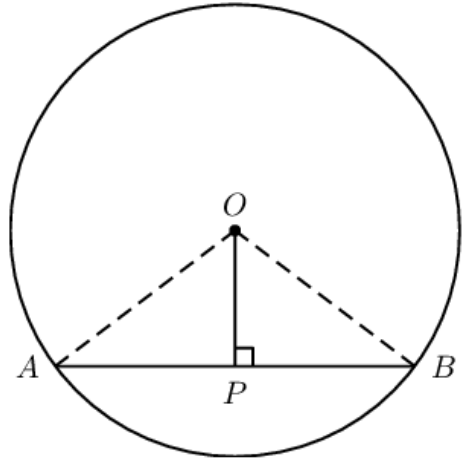
then _____

Lab #13

Perpendicular line from circle center bisects chord

Procedure:

- 1.) Keep your board arranged from Lab #12.
- 2.) Fill in the first column using numbers from lab #12
- 3.) Measure segment OP using centimeters.
- 4.) Measure segment OA using centimeters
- 5.) Using the measurements, complete the table of values.



Name	AP	OP	OA	AP ²	OP ²	AP ² + OP ²	AO ²

Theory Statement (in your words):

If _____,

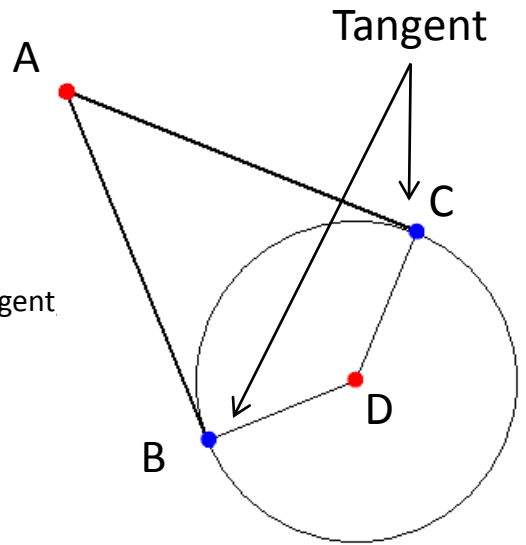
then _____

Lab #14

Two tangents from a point outside of a circle

Procedure:

- 1.) Arrange the rubberband/string so that it originates from a point outside the circle and goes through the two points tangent and then the center (as shown in the picture).
- 2.) Measure the length of AC (using centimeters)
- 3.) Measure the length of AB (using centimeters)
- 4.) Create a theory statement based on your data



Name	AC	AB

Theory Statement (in your words):

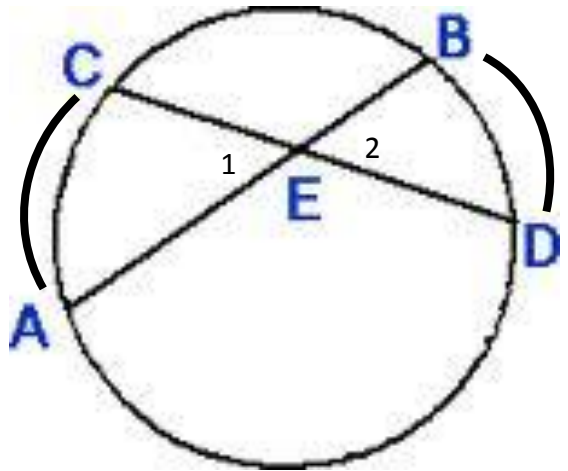
If _____,
then _____

Lab #15

Angles form by intersecting chords.

Procedure:

- 1.) Create two intersecting chords (like picture)
- 2.) Measure $\angle 1$
- 3.) Measure $\angle 2$
- 4.) Measure Arc CA and Arc BD
- 5.) Complete the calculation $\frac{1}{2}(\text{arc CA} + \text{arc BD})$ using your data from #4
- 6.) Create a theory statement based on the data



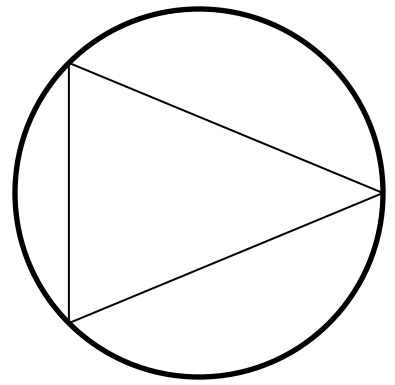
Name	$\angle 1$	$\angle 2$	Arc CA	Arc BD	$\frac{1}{2}(\text{arc CA} + \text{arc BD})$

Theory Statement (in your words):

If _____,

then _____

Exploring the Law of Cosines



Procedure:

- 1.) Create a scalene triangle.
- 2.) With a pencil, lightly label $\angle A$, $\angle B$, $\angle C$, and sides a , b , c
- 2.) Measure side a using cm, record in the table below
- 3.) Measure side b using cm, record in the table below
- 4.) Measure $\angle C$, record in the table below
- 5.) Complete the calculation $a^2 + b^2 - 2ab \cos C$ and record in the table below (make sure your calculator is in degree mode)
- 6.) Measure side C , record it in the table below
- 7.) Find C^2 , record in the table below.

Name	a	b	$\angle C$	c	c^2	$a^2 + b^2 - 2ab \cos C$

Theory Statement (in your words):

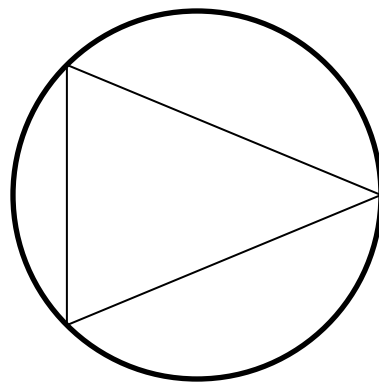
If _____,

then _____

Exploring the Law of Sines

Procedure:

- 1.) Create a scalene triangle.
- 2.) With a pencil, lightly label $\angle A$, $\angle B$, $\angle C$, and sides a , b , c
- 3.) Measure side a using cm, record in the table below
- 4.) Measure $\angle A$, record in the table below
- 5.) Find $\sin A$, make sure your calculator is in degree mode.
- 6.) Measure side b using cm, record below
- 7.) Measure $\angle B$, record in the table below
- 8.) Find $\sin B$, make sure your calculator is in degree mode.
- 9.) Calculate $\frac{\sin A}{a}$, record in the table.
- 10.) Calculate $\frac{\sin B}{b}$, record in the table.



Name	a	$\angle A$	$\sin A$	b	$\angle B$	$\sin B$	$\frac{\sin A}{a}$	$\frac{\sin B}{b}$

Theory Statement (in your words):

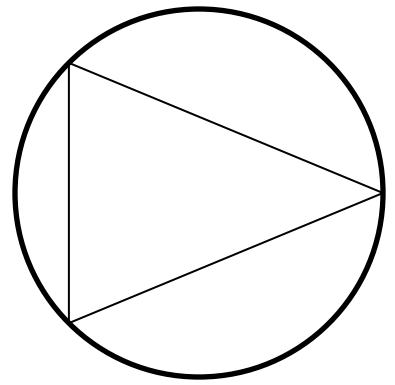
If _____,

then _____

Exploring the Law of Sines

Procedure:

- 1.) Create a scalene triangle.
- 2.) With a pencil, lightly label $\angle A$, $\angle B$, $\angle C$, and sides a , b , c
- 3.) Measure side a using cm, record in the table below
- 4.) Measure $\angle A$, record in the table below
- 5.) Find $\sin A$, make sure your calculator is in degree mode.
- 6.) Measure side b using cm, record below
- 7.) Measure $\angle B$, record in the table below
- 8.) Find $\sin B$, make sure your calculator is in degree mode.
- 9.) Calculate $a(\sin B)$, record in the table.
- 10.) Calculate $b(\sin A)$, record in the table.



Name	a	$\angle A$	$\sin A$	b	$\angle B$	$\sin B$	$a(\sin B)$	$b(\sin A)$

Theory Statement (in your words):

If _____,

then _____