

Inscribed Angles Theorem

ID: 12437

 Time Required
 15 minutes

Activity Overview

Students will begin this activity by looking at inscribed angles and central angles and work towards discovering a relationship among the two, the Inscribed Angle Theorem. Then, students will look at two corollaries to the theorem.

Topic: Circles

- *Construct central and inscribed angles*
- *Inscribed angles theorem*

Teacher Preparation and Notes

- *This activity was written to be explored with the Cabri Jr. application on the TI-84 Plus family Graphing Calculator.*
- *Before beginning this activity, make sure that all students have the Cabri Jr. application, and the Cabri Jr. files INSCRIB1.8xv, INSCRIB2.8xv, INSCRIB3.8xv, INSCRIB4.8xv and INSCRIB5.8xv loaded on their graphing calculators.*
- ***To download the Cabri Jr. files (.8xv files) and student worksheet, go to education.ti.com/exchange and enter "12437" in the keyword search box.***

Associated Materials

- *InscribedAnglesTheorem_Student.doc*
- *INSCRIB1.8xv*
- *INSCRIB2.8xv*
- *INSCRIB3.8xv*
- *INSCRIB4.8xv*
- *INSCRIB5.8xv*

Suggested Related Activities

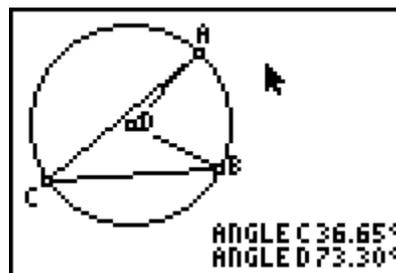
To download any activity listed, go to education.ti.com/exchange and enter the number in the keyword search box.

- *Inscribed and Central Angles in a Circle (TI-Nspire technology) — 9054*
- *Inscribed Angles (TI-Nspire technology) — 9687*
- *Central versus Inscribed Angles in Circles (TI-84 Plus Family) — 7111*

Problem 1 – Similar Triangles

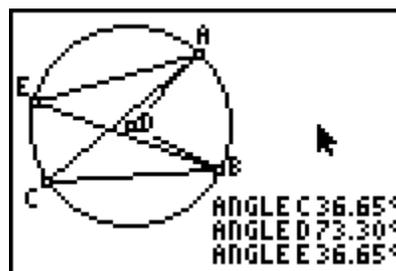
Students will begin this activity by looking at inscribed angles and central angles and work towards discovering a relationship among the two.

Students will be asked to collect data by moving points A and C. Students are asked questions about the relationships in the circle and are asked to make a conjecture. In order to calculate the ratio of $m\angle ACB$ to $m\angle ADB$, students can use the **Calculate** command in the F5:Appearance menu.



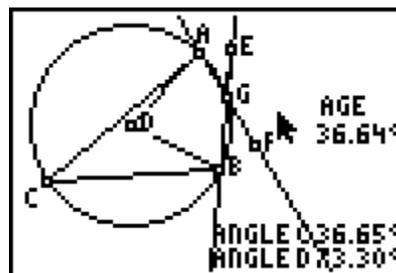
On page 1.6, students will look at two inscribed angles intercepted by the same arc and are asked to make a conjecture about the relationship.

In an advanced setting, a proof of the inscribed angle theorem and the two conjectures in problem one are appropriate and can be proved using isosceles triangles.



Problem 2 – Extension of the Inscribed Angle Theorem

In Problem 2, students will look at two more angles created from the central angle and the intercepted arc. Both sections of this problem are corollaries of the Inscribed Angle Theorem and both solutions are congruent to the measure of the central angle intercepted by the arc or one-half the measure of the central angle.



Student Solutions

1. Sample answers

Position	Measure of $\angle ACB$	Measure of $\angle ADB$	$\frac{m\angle ACB}{m\angle ADB}$
1	36.65°	73.30°	0.5
2	49.50°	99.01°	0.5
3	49.50°	99.01°	0.5
4	49.50°	99.01°	0.5

2. $\frac{1}{2}$

3. Sample answers

Position	Measure of $\angle ACB$	Measure of $\angle AEB$
1	36.65°	36.65°
2	48.30°	48.30°
3	48.30°	48.30°
4	48.30°	48.30°

4. Sample answer: They are congruent.

5. diameter of the circle

6. 90°

7. Sample answers

Position	Measure of $\angle ACB$	Measure of $\angle ADB$	Measure of $\angle AGE$
1	36.65°	73.30°	36.65°
2	67.04°	134.10°	67.04°
3	67.04°	134.10°	67.04°
4	67.04°	134.10°	67.04°

8. $\frac{1}{2}$

9. Sample answers

Position	Measure of $\angle ACB$	Measure of $\angle ADB$	Measure of $\angle ABE$
1	57.65°	115.30°	57.64°
2	49.20°	98.40°	49.19°
3	54.90°	109.80°	54.90°
4	63.55°	127.10°	63.54°

10. $\frac{1}{2}$