LESSON MAKER PRO

Circle Angle Connections

Use a shared arc to connect central and inscribed angles.

HIGH SCHOOL · G-C.2

G-C.2 "Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles..."

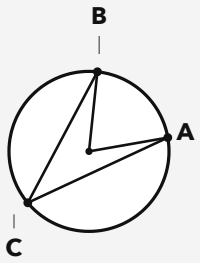
NAME _____ DATE _____

THE ANGLE RULE

A central angle has its vertex at the center of a circle. An inscribed angle has its vertex on the circle and measures half the central angle when both angles intercept the same arc.

WORKED EXAMPLE

Use the figure to find ∠ACB.

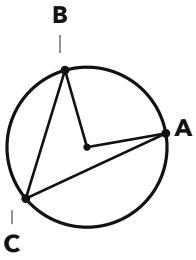


1. ∠AOB and ∠ACB intercept the same arc, AB.
2. An inscribed angle is half the central angle.
3. 74° / 2 = 37°.

Answer: ∠ACB = 37°

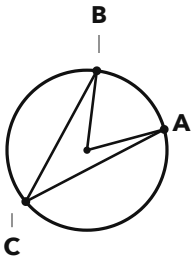
PRACTICE 6 problems

1 Use the figure to find ∠ACB.



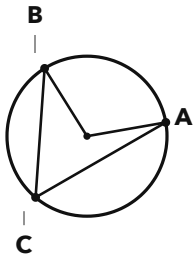
ANSWER _____

2 Use the figure to find ∠AOB.



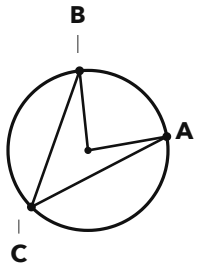
ANSWER _____

3 Use the figure to find ∠ACB.



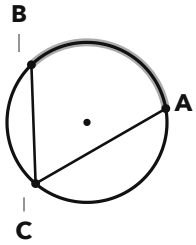
ANSWER _____

4 Use the figure to find ∠AOB.



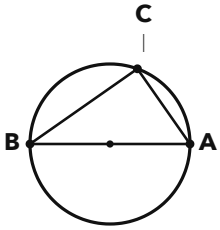
ANSWER _____

5 Use the figure to find ∠ACB.



ANSWER _____

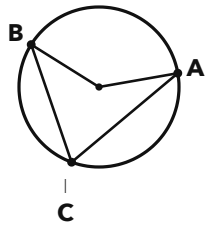
6 Use the figure to find ∠ACB.



ANSWER _____

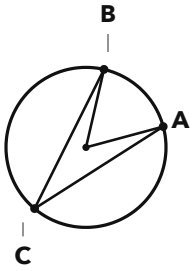
APPLY IT Show your work

1 Three cameras sit around a circular concert stage. Use the diagram to find ∠ACB, the angle seen from camera C.



ANSWER _____

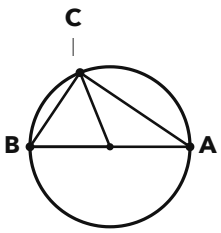
2 A game designer places three targets on a circular screen. Use the diagram to find ∠AOB, the rotation needed to aim a beam from A to B.



ANSWER _____

CHALLENGE One step up

Use the figure to find ∠ABC. Explain how you used the diameter and the central angle.



WORK SPACE AND ANSWER

ANSWER KEY

Circle Angle Connections

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the figure to find ∠ACB.	**48°**
2	Use the figure to find ∠AOB.	**68°**
3	Use the figure to find ∠ACB.	**56°**
4	Use the figure to find ∠AOB.	**86°**
5	Use the figure to find ∠ACB.	**62°**
6	Use the figure to find ∠ACB.	**90°**

PART 2 · APPLY IT

1. **69°** The angles intercept the same arc. Half of 138° is 69°.
2. **62°** The central angle is twice the inscribed angle that intercepts the same arc. Twice 31° is 62°.

CHALLENGE

56°. Since AB is a diameter, ∠ACB = 90°. Also, ∠BAC = 68° / 2 = 34°, so ∠ABC = 180° - 90° - 34° = 56°.

For the challenge, accept any valid explanation that uses the right angle on a diameter and the shared-arc angle relationship.