LESSON MAKER PRO

Circle Angle Chase

Use arcs to find central, inscribed, interior, and exterior angles.

HIGH SCHOOL · MA.912.GR.6.2

MA.912.GR.6.2 "Solve mathematical and real-world problems involving the measures of arcs and related angles."

NAME _____ DATE _____

ARC AND ANGLE RULES

A central angle has the same measure as its intercepted arc. An inscribed angle, or an angle formed by a tangent and a chord, measures half its intercepted arc. For angles formed inside a circle, use half the sum of the intercepted arcs. For angles formed outside a circle, use half the difference of the intercepted arcs.

WORKED EXAMPLE

In a circle, m arc JK = 116 degrees. Point L lies on the circle, and angle JLK intercepts arc JK. Find m angle JLK.

1. An inscribed angle equals half its intercepted arc.
2. m angle JLK = 1/2(116 degrees).
3. m angle JLK = 58 degrees.

Answer: 58 degrees

PRACTICE 6 problems

1 A central angle AOB measures 86 degrees. Find m arc AB.

ANSWER _____

2 An inscribed angle CED intercepts arc CD, and m arc CD = 154 degrees. Find m angle CED.

ANSWER _____

3 A tangent at P and chord PQ form an angle measuring 41 degrees. Find the measure of minor arc PQ.

ANSWER _____

4 Chords AB and CD intersect at X inside a circle. m arc AC = 110 degrees and m arc BD = 70 degrees. Find m angle AXC.

ANSWER _____

5 A tangent ET and a secant EAB are drawn from external point E, with A between E and B. m arc TB = 210 degrees and m arc TA = 130 degrees. Find m angle TEB.

ANSWER _____

6 Points R, S, T, and U lie on a circle in that order. m arc RS = 96 degrees and m arc ST = 138 degrees. Find m angle RUT.

ANSWER _____

APPLY IT Show your work

1 At an esports tournament, a circular scoreboard has markers A, B, and C on its rim. The viewing angle ACB is an inscribed angle measuring 68 degrees and intercepts minor arc AB. What is the measure of major arc AB?

WORK SPACE

ANSWER _____

2 A student stands at point E outside a circular music festival stage. Two sight lines form secants EAB and ECD, where A and C are the nearer points on the stage. If m arc BD = 220 degrees and m arc AC = 100 degrees, find m angle E.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Chords AB and CD intersect at X inside a circle. m arc AC = 4x + 40 degrees, m arc BD = 2x + 20 degrees, and m angle AXC = 4x + 10 degrees. Find x and m angle AXC.

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_____

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A central angle AOB measures 86 degrees. Find m arc AB.	**86 degrees**
2	An inscribed angle CED intercepts arc CD, and m arc CD = 154 degrees. Find m angle CED.	**77 degrees**
3	A tangent at P and chord PQ form an angle measuring 41 degrees. Find the measure of minor arc PQ.	**82 degrees**
4	Chords AB and CD intersect at X inside a circle. m arc AC = 110 degrees and m arc BD = 70 degrees. Find m angle AXC.	**90 degrees**
5	A tangent ET and a secant EAB are drawn from external point E, with A between E and B. m arc TB = 210 degrees and m arc TA = 130 degrees. Find m angle TEB.	**40 degrees**
6	Points R, S, T, and U lie on a circle in that order. m arc RS = 96 degrees and m arc ST = 138 degrees. Find m angle RUT.	**117 degrees**

PART 2 · APPLY IT

1. **224 degrees** The intercepted minor arc AB measures 2(68) = 136 degrees. The major arc AB measures 360 - 136 = 224 degrees.
2. **60 degrees** An exterior secant angle equals half the difference of the far arc and near arc. m angle E = 1/2(220 - 100) = 60 degrees.

CHALLENGE

x = 20; m angle AXC = 90 degrees

Accept equivalent notation such as 86° or 86 degrees. For the challenge, students must give both x = 20 and the angle measure of 90 degrees.