

Unit 7: Circles

ADVANCED

Name: _____

Date: _____

Solve each problem. Give exact answers; use π where indicated and express arc lengths as a multiple of π .

1. A chord AB and a chord CD intersect at point E inside a circle. The arc AC (intercepted by angle AEC) measures 84° and the arc BD (intercepted by the vertical angle BED) measures 138° . Find the measure, in degrees, of angle AEC.

Answer: _____

3. A tangent and a secant meet at a point outside a circle. The intercepted arc farther from the vertex measures 220° (the two intercepted arcs together make up the whole circle). Find the measure, in degrees, of the angle formed at the external point.

Answer: _____

5. A circle has radius 18. Find the length of an arc intercepted by a central angle of 100° . Give the exact answer as a multiple of π .

Answer: _____

7. From an external point, a tangent of length 12 and a secant are drawn to a circle. The secant's near (external) segment has length 6. Find the length of the far internal chord portion of the secant (the part of the secant inside the circle).

Answer: _____

9. Two tangents are drawn to a circle from an external point. The minor arc between the two points of tangency measures 110° . Find the measure, in degrees, of the angle between the two tangents.

Answer: _____

2. From an external point, two secants are drawn to a circle. The far intercepted arc measures 150° and the near intercepted arc measures 46° . Find the measure, in degrees, of the angle formed at the external point.

Answer: _____

4. An inscribed angle intercepts an arc of 246° . Find the measure, in degrees, of the inscribed angle.

Answer: _____

6. Two chords intersect inside a circle. One chord is split into segments of length 8 and x ; the other chord is split into segments of length 6 and 20. Using the intersecting-chords product rule, find x .

Answer: _____

8. A circle has radius 15. An arc on this circle has length 10π . Find the measure, in degrees, of the central angle that subtends this arc.

Answer: _____

10. A wheel of radius 21 rotates through 240° . Find the distance traveled by a point on the rim (the arc length). Give the exact answer as a multiple of π .

Answer: _____

11. A central angle and an inscribed angle in the same circle both intercept the same arc. If the inscribed angle measures 37° , find the measure, in degrees, of the central angle.

Answer: _____

12. In a circle, a diameter is drawn. A point P on the circle is joined to the two endpoints of the diameter to form an inscribed triangle. One of the two non-right angles of this triangle intercepts an arc of 130° . Find the measure, in degrees, of that inscribed angle.

Answer: _____