

Circles: math test, Grade 10 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Tangents

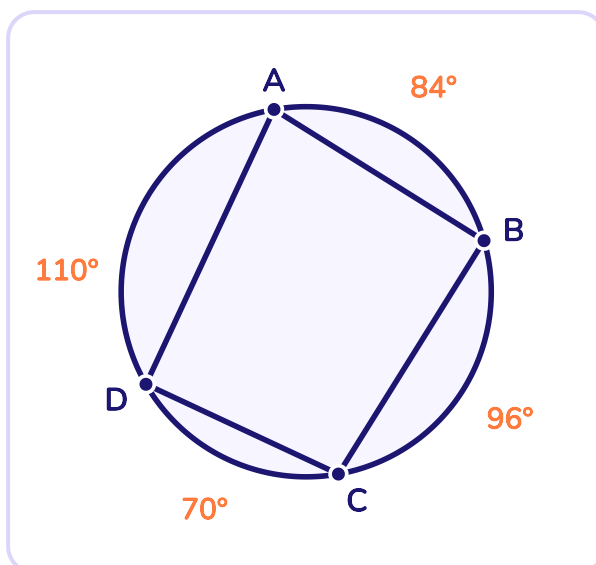
/ 3 pts

A circle has center O and radius 9 cm. The point P is 15 cm from O . Two tangent segments PT and PS are drawn to the circle. (a) Find PT . (b) What is PS ? Explain.

2 Inscribed angles

/ 4 pts

Points A, B, C, D lie on a circle and split it into arcs $\widehat{AB} = 84^\circ$, $\widehat{BC} = 96^\circ$, $\widehat{CD} = 70^\circ$, $\widehat{DA} = 110^\circ$ (see the figure).



- (a) Find $m\angle ACB$. (b) Find $m\angle ABD$. (c) Find $m\angle ABC$ and explain what it tells you about AC . (d) Find $m\angle DAB$ and $m\angle BCD$, and show that they are supplementary.

3 Arc and sector

/ 4 pts

A circle has radius **15** cm. A sector has a central angle of **48°** . Find (a) the length of the arc and (b) the area of the sector. Give exact values, then round to the nearest hundredth. Calculator allowed.

4 Segment lengths

/ 4 pts

- (a) Chords AB and CD meet at E with $AE = 8$, $EB = 3$, $CE = 4$. Find ED . (b) From a point P , a tangent of length **6** and a secant with external part **4** are drawn. Find the length of the whole secant and of the chord inside the circle.

5 Equation of a circle

/ 3 pts

Consider $x^2 + y^2 - 12x + 4y + 15 = 0$. (a) Rewrite it in standard form. (b) Give the center and radius. (c) Does the point $(2, 1)$ lie on the circle?

6 Angle outside a circle

/ 2 pts

Two secants meet at a point outside a circle. The far arc measures 130° and the near arc measures 46° . Find the measure of the angle formed by the secants.



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