

Geometry - Circles: Angles, Chords and Tangents

- Test Answer Key

Common Core G-C.A.1, G-C.A.2, G-C.A.3, G-C.A.4 · maths-pdf.fr/en/

Use this answer key and scoring guide for the circle angles test. Each solution shows the full work, and the scoring note tells how the points are split between method and final answer. Partial credit is listed so that grading stays consistent from one paper to the next.

Geometry · Common Core State Standards: **G-C.A.1, G-C.A.2, G-C.A.3, G-C.A.4**

Question 1 - Central and inscribed [2 pts]

Central angle = arc = 124° .

Inscribed angle = $124^\circ \div 2 = 62^\circ$.

124° and 62°

Scoring: 1 point each.

Question 2 - Algebra with arcs [2 pts]

$$7x - 8 = 2(3x + 2)$$

$$7x - 8 = 6x + 4$$

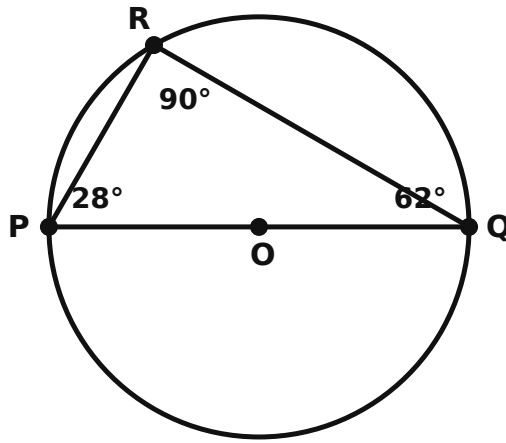
$$x = 12$$

The arc equals the central angle: $7(12) - 8 = 76^\circ$.

$x = 12$; arc 76°

Scoring: 1 point for the equation, 1 point for x and the arc.

Question 3 - Semicircle [3 pts]



Angles 28° , 90° , 62° .

- a. 90° (inscribed in a semicircle).
- b. $180^\circ - 90^\circ - 28^\circ = 62^\circ$
- c. $2 \cdot m\angle Q = 124^\circ$

(a) 90° ; (b) 62° ; (c) 124°

Scoring: 1 point per part.

Question 4 - Inscribed quadrilateral [2 pts]

$$(2x+10)+(3x-20)=180$$

$$5x-10=180$$

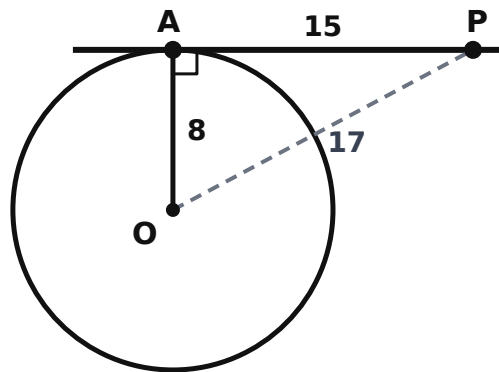
$$x=38$$

$$m\angle A = 86^\circ \text{ and } m\angle C = 94^\circ.$$

$x = 38$; 86° and 94°

Scoring: 1 point for the equation, 1 point for x and the angles.

Question 5 - Tangent [3 pts]



$$OP = 17.$$

- a. 90° : a tangent is perpendicular to the radius at the point of tangency.
- b. $OP = \sqrt{8^2 + 15^2} = 17$
- c. Tangent segments from one point are equal, so $PB = 15$.

(a) 90° ; (b) 17; (c) 15

Scoring: 1 point per part.

Question 6 - Chord distance [2 pts]

Half of the chord is 8.

$$d = \sqrt{10^2 - 8^2} = 6$$

d = 6

Scoring: 1 point for halving, 1 point for d.

Question 7 - Triangle circles [2 pts]

Hypotenuse $\sqrt{25+144} = 13$, so the circumradius is 6.5.

$$\text{Inradius: } \frac{5+12-13}{2} = 2.$$

6.5 and 2

Scoring: 1 point each.

Question 8 - Similar circles [2 pts]

Translate P so that its center is on the center of Q, then dilate about that center with scale factor $\frac{10}{4} = 2.5$.

Area ratio: $2.5^2 = 6.25$.

Scoring: 1 point for the transformation, 1 point for the area ratio.

Question 9 - Tangent-chord angle [2 pts]

The angle is half of the intercepted arc, so the arc is $2 \cdot 48^\circ = 96^\circ$.

An inscribed angle on that arc is $96^\circ \div 2 = 48^\circ$.

96° and 48°

Scoring: 1 point each.

Total
20 points