Circles Geometry Quiz

Grade Level: Grade 9 | **Date:** 2025-11-17 21:32:36

Instructions: Answer all questions. Show your work where applicable.

Question 1: What is the angle formed by joining the endpoints of a chord to the center of the circle called?

A) Angle on the circumference
B) Angle subtended by the chord at the center
C) Inscribed angle
D) Reflex angle

Question 2: If you draw two chords of different lengths in a circle, what is true about the angles they subtend at the center?

A) The longer chord subtends a smaller angle.
B) The longer chord subtends a bigger angle.
C) Both chords subtend equal angles.
D) The angles are always 90 degrees.

Question 3: In a circle with center O, if chord AB is equal in length to chord CD, what can you conclude about the angles $\angle AOB$ and $\angle COD$?

Answer: _____

Question 4: A chord AB of a circle has a length of 10 cm. If a line segment is drawn from the center O perpendicular to AB, what is the length of the segment from A to the point where the perpendicular meets AB?

A) 10 cm
B) 5 cm
C) 20 cm
D) Cannot be determined without radius

Question 5: Chords PQ and RS are in the same circle. If the perpendicular distance from the center to PQ is 3 cm, and the perpendicular distance from the center to RS is also 3 cm, what can you say about the lengths of PQ and RS?

Answer: _____

Question 6: What is the measure of the angle subtended by a diameter at any point on the circumference of the circle?

A) 45 degrees
B) 60 degrees
C) 90 degrees
D) 180 degrees

Question 7: An arc of a circle subtends an angle of 70° at the center. What angle will it subtend at any point on the remaining part of the circle?

Answer: _____

Question 8: In a cyclic quadrilateral ABCD, if $\angle A = 110°$, what is the measure of $\angle C$?

A) 110°
B) 70°
C) 90°
D) 180°

Question 9: A chord AB of a circle is 16 cm long. The radius of the circle is 10 cm. Find the distance of the chord from the center.

Answer: _____

Question 10: In a circle, a chord PQ is equal to the radius of the circle. Find the angle subtended by the chord at the center.

Answer: _____

Answer Key

Question 1: B) Angle subtended by the chord at the center

Explanation: The angle formed by connecting the endpoints of a chord to the center of the circle is specifically defined as the angle subtended by the chord at the center.

Question 2: B) The longer chord subtends a bigger angle.

Explanation: As stated in the text, the longer the chord, the bigger the angle it will subtend at the center.

Question 3: $\angle AOB = \angle COD$

Explanation: Theorem 9.1 states that equal chords of a circle subtend equal angles at the center.

Question 4: B) 5 cm

Explanation: Theorem 9.3 states that the perpendicular from the center of a circle to a chord bisects the chord. Therefore, it divides the 10 cm chord into two equal segments of 5 cm each.

Question 5: PQ = RS

Explanation: Theorem 9.6 states that chords equidistant from the center of a circle are equal in length.

Question 6: C) 90 degrees

Explanation: Theorem 9.8 states that the angle in a semicircle is a right angle (90 degrees).

Question 7: 35°

Explanation: Theorem 9.7 states that the angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle. So, 70° / 2 = 35°.

Question 8: B) 70°

Explanation: Theorem 9.10 states that the sum of either pair of opposite angles of a cyclic quadrilateral is 180°. So, $\angle A + \angle C = 180°$, which means $110° + \angle C = 180°$, so $\angle C = 70°$.

Question 9: 6 cm

Explanation: Draw a perpendicular from the center O to the chord AB, meeting at M. This bisects the chord, so AM = 16/2 = 8 cm. OA is the radius, so OA = 10 cm. In right-angled triangle OMA, by Pythagoras theorem: $OM^2 + AM^2 = OA^2$. So, $OM^2 + 8^2 = 10^2$, which means $OM^2 + 64 = 100$. $OM^2 = 36$, so OM = 6 cm.

Question 10: 60°

Explanation: Let O be the center. Since chord PQ is equal to the radius, OP = OQ = PQ (all are radii). This means triangle OPQ is an equilateral triangle. The angles in an equilateral triangle are all 60°, so $\angle POQ = 60°$.