Mathematics

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(Chapter – 5) (I'm Up and Down, and Round and Round) (Assignment 5)

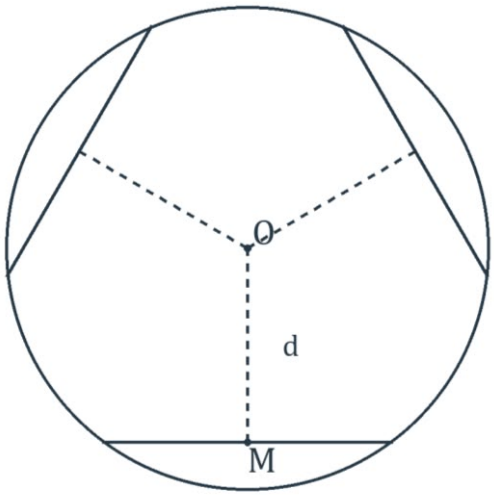
(Class – 9)

Name _____ Date _____

Answer all 15 questions. Choose one option for each MCQ. Show your working and give reasons where required. Figures are schematic unless stated otherwise.

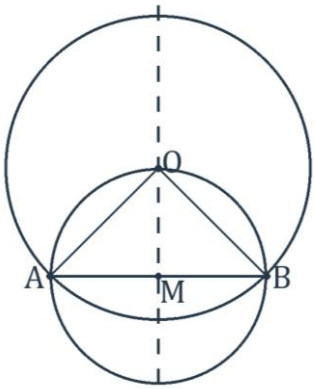
Section A: Multiple Choice Questions

1. Consider all chords of a circle of a fixed length. What is the shape formed by the midpoints of all these chords?



(a) A straight line
(b) A concentric circle; centre for diameters
(c) The original circle
(d) Two separate points

2. As you move away from segment AB along its perpendicular bisector, do the radii of the circles containing A and B increase or decrease?



(a) Decrease
(b) Stay constant
(c) Increase
(d) Become zero

3. A, B and C are three collinear points.

Is it possible for a circle to pass through collinear points?

(a) No, for three distinct points
(b) Yes, exactly one circle
(c) Yes, exactly two circles
(d) Yes, infinitely many circles

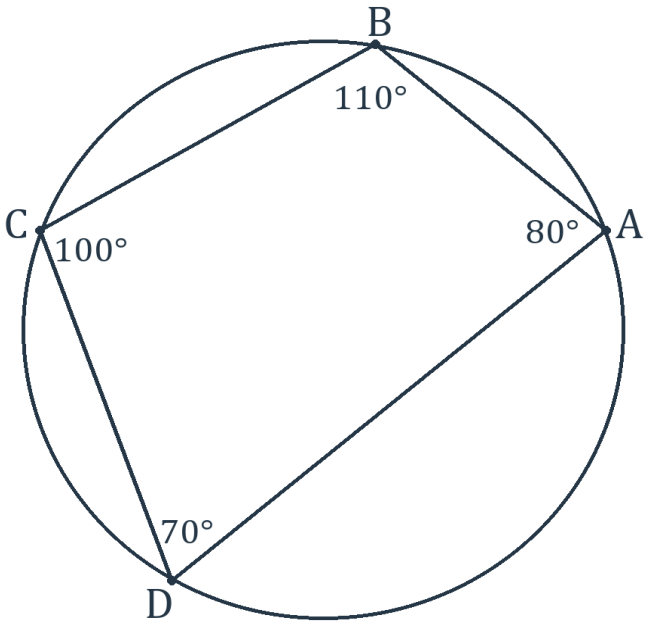
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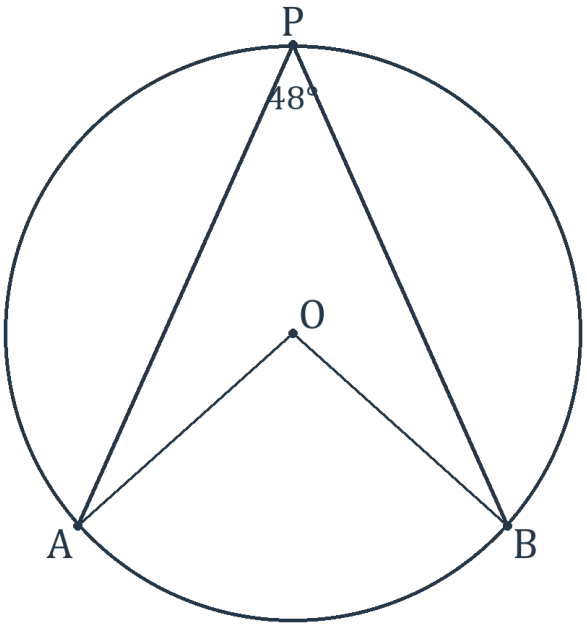
(Class – 9)

4. A cyclic quadrilateral has angles measuring ∠A = 80°, ∠B = 110°, ∠C = 100°, and ∠D = 70°. Can such a quadrilateral be drawn? Explain why or why not.



(a) No; adjacent angles differ
(b) No; the sum is 360°
(c) Yes; all angles are acute
(d) Yes; opposite angles sum to 180°

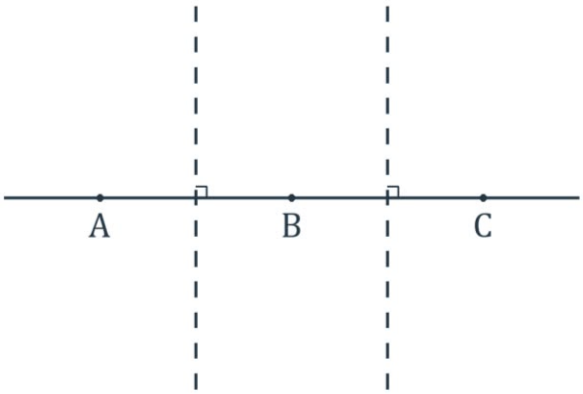
5. A chord subtends 48° at a point on the major arc. What is the angle subtended by the minor arc at the centre?



(a) 24°
(b) 48°
(c) 96°
(d) 132°

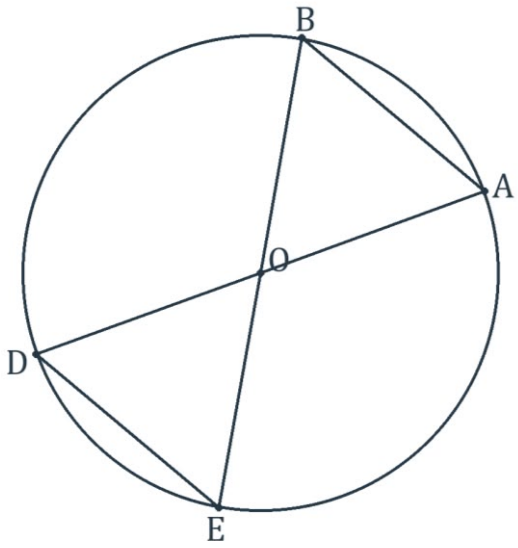
Section B: Very Short Answer Questions

6. A, B and C are three collinear points.
Can you find a point P such that PA = PB = PC ?



Answer:

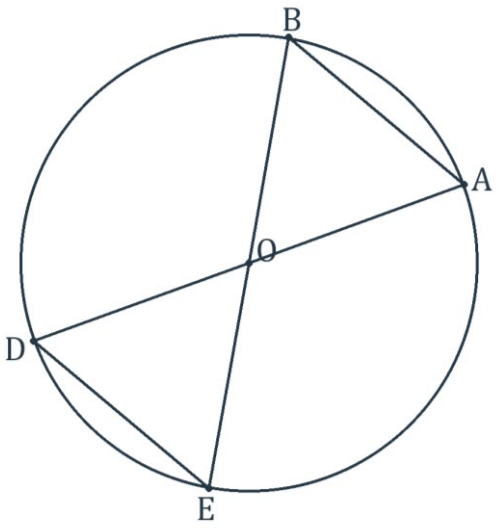
7. Equal chords of a circle subtend equal angles at the centre of the circle.



Explain why this statement is true.

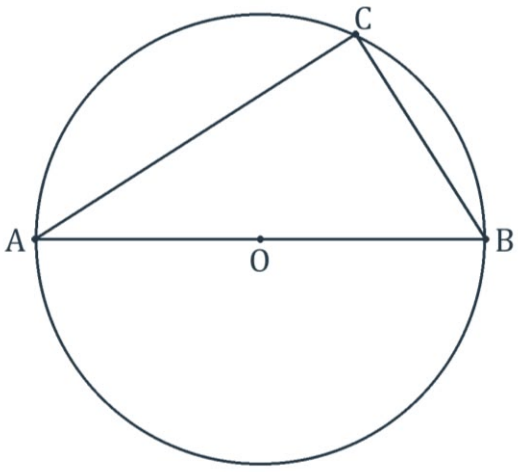
Answer:

8. Now suppose we have two chords that subtend equal angles at the centre. Are the chords equal?



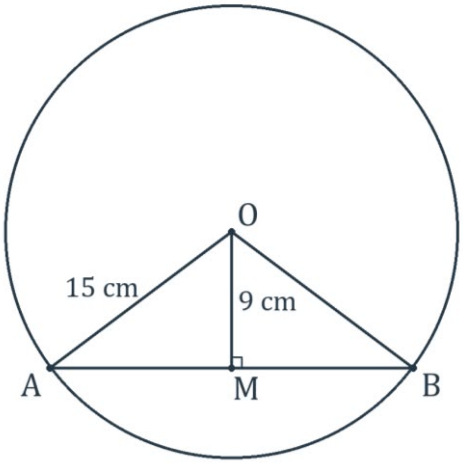
Answer:

9. The diameter of a circle is AB. Point C is on the circumference. What is the measure of the ∠ACB? Explain your reasoning.



Answer:

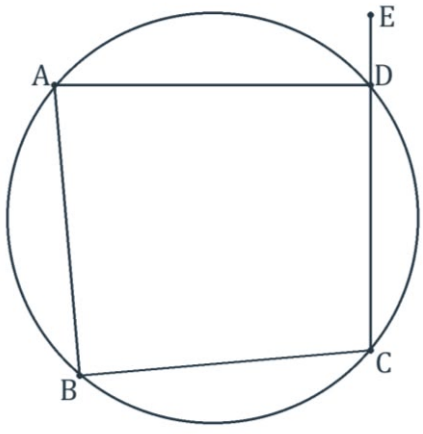
10. A circle has a radius of 15 cm. A chord is drawn. The distance from the centre of the circle to the chord is 9 cm. What is the length of the chord?



Answer:

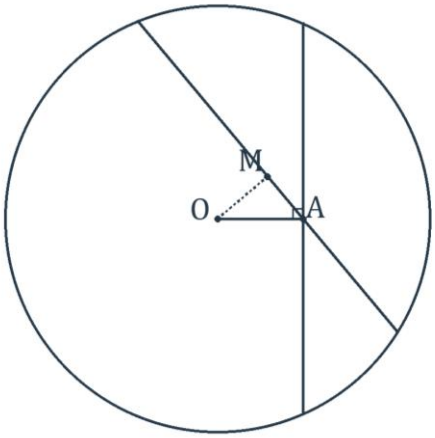
Section C: Short and Long Answer Questions

11. Let ABCD be a cyclic quadrilateral. Explain why the exterior angle at any vertex is equal to the interior opposite angle (e.g., ∠CDE = ∠ABC, where E is a point on the extension of side CD).



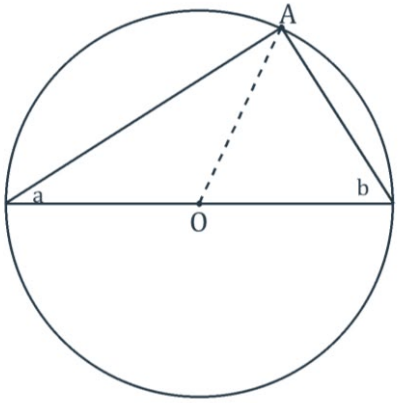
Answer:

12. Let A be any point within a given circle with centre O. Show that the shortest chord of the circle that passes through point A is the one that is perpendicular to OA.



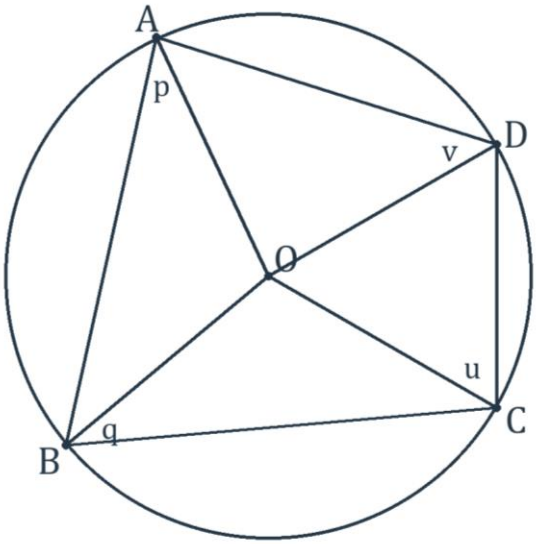
Answer:

13. How would you use the following figure to justify the statement that the angle in a semicircle is 90°?



Answer:

14. How would you use the following figure to justify the statement that the sum of the opposite angles of a cyclic quadrilateral is 180°?



Answer:

15. Two parallel chords of a circle of radius 13 cm have lengths 10 cm and 24 cm. They lie on opposite sides of the centre. Find the distance between them and draw a labelled sketch.

Answer:

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