Mathematics

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(Chapter – 5) (I'm Up and Down, and Round and Round) (Assignment 2)

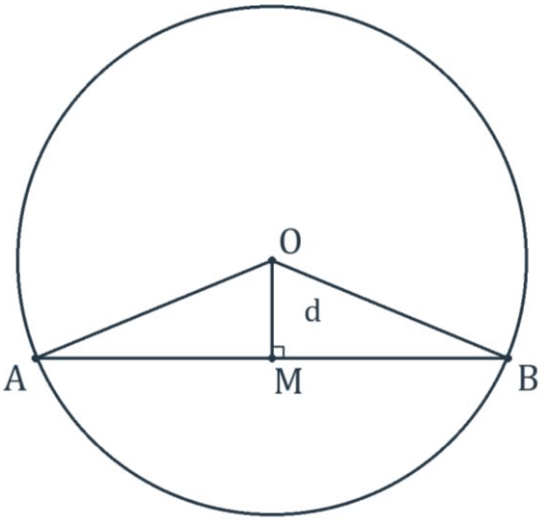
(Class – 9)

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

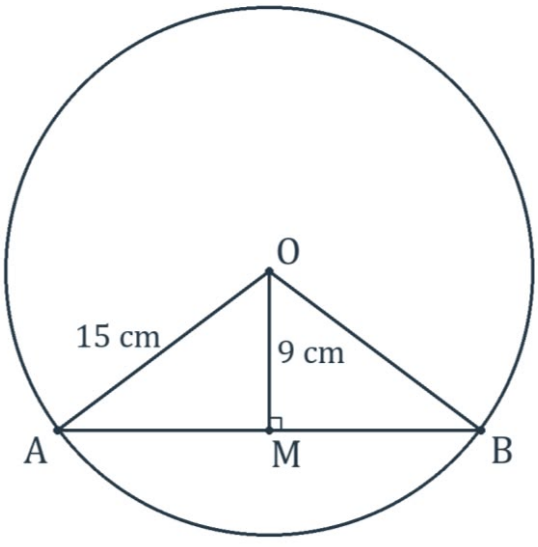
1. The diameter of a circle is 26 cm. A chord of length 24 cm is drawn in the circle. Find the distance from the centre of the circle to the chord.



AB = 24 cm

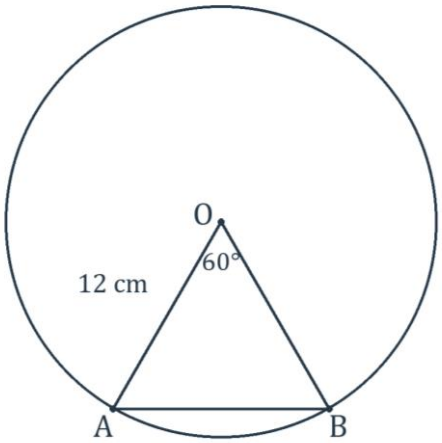
(a) 5 cm
(b) 12 cm
(c) 13 cm
(d) 10 cm

2. 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?



(a) 12 cm
(b) 18 cm
(c) 24 cm
(d) 30 cm

3. In a circle with centre O, the central angle AOB is 60°. If the radius of the circle is 12 cm, what is the length of the chord AB?



(a) 6 cm
(b) 12 cm
(c) 18 cm
(d) 24 cm

4. Let us assume that A, B and C are not collinear. Is there always a circle passing through A, B and C? Can there be more than one circle through A, B and C?

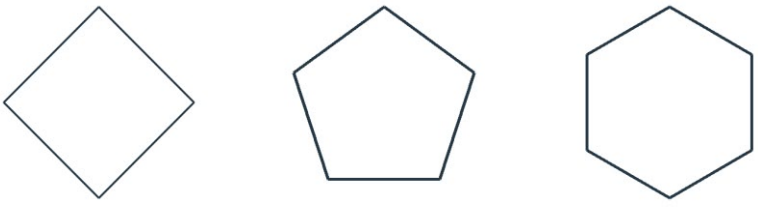
(a) Yes; infinitely many
(b) No circle is possible
(c) Yes; exactly two
(d) Yes; exactly one

5. Two equal chords of a circle are 4 cm and d cm from its centre. Find d.

(a) 2
(b) 4
(c) 8
(d) 16

Section B: Very Short Answer Questions

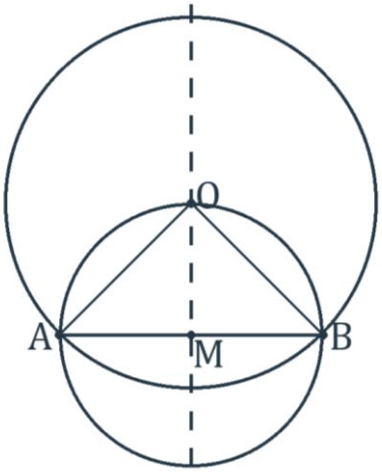
6. What are the rotational symmetries of a square? How many lines of reflection symmetry does it have? What about a regular pentagon? A regular hexagon?



Square Pentagon Hexagon

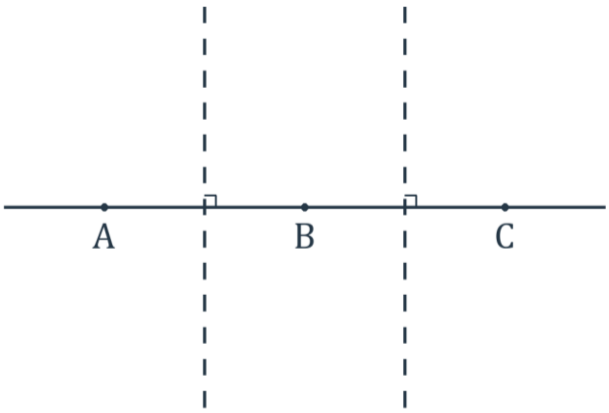
Answer:

7. As you go along the perpendicular bisector, will the circle drawn from that point through A and B appear more curved or less curved?



Answer:

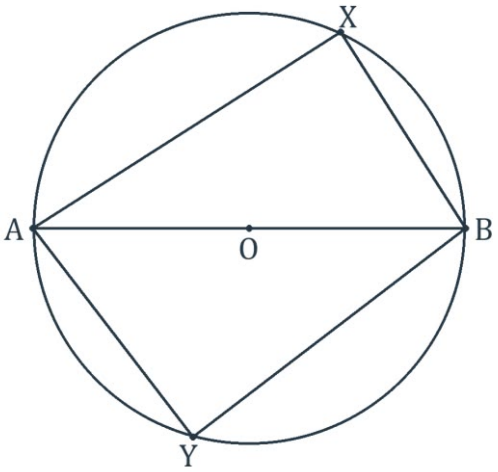
8. What if A, B and C lie on a straight line, i.e., are collinear? Can you explain why, in this case, there is no circle through A, B and C?



Answer:

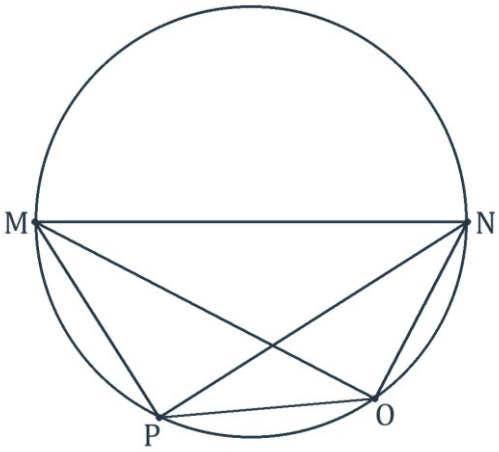
9. Let A and B be two points on a circle with centre O.

(ii) Is it true that if ∠AXB = ∠AYB, then X and Y lie on the same side of the circle?



Answer:

10. A quadrilateral MNOP is inscribed in a circle. If MN is a diameter, what can you say about ∠MOP and ∠MNP? Explain your reasoning.



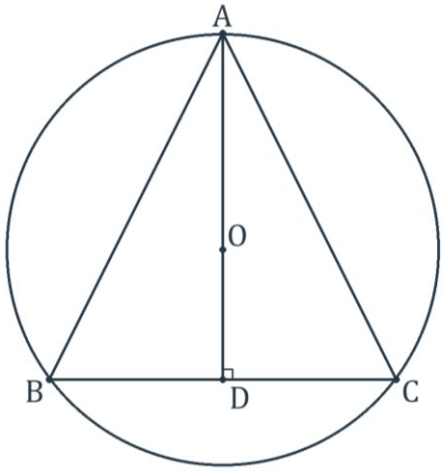
Answer:

Section C: Short and Long Answer Questions

11. Draw ΔABC with AB = 5 cm, ∠A = 100°, AC = 4 cm. Draw the circumcircle of ΔABC. Is the centre inside or outside the triangle?

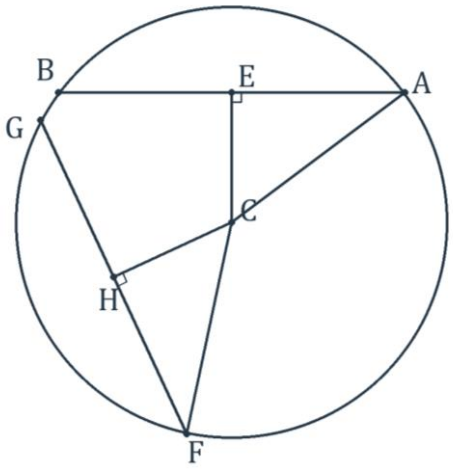
Answer:

12. An isosceles triangle ABC is inscribed in a circle, with AB = AC. Show that the altitude from A to BC passes through the centre of the circle.



Answer:

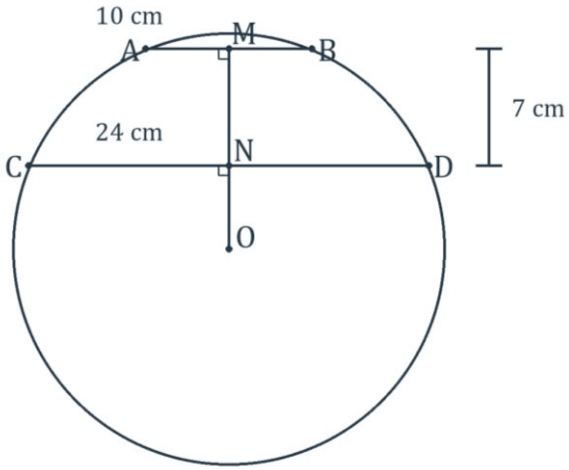
13. Use the Baudhāyana–Pythagoras theorem to show why Theorem 6 must be true.



Theorem 6: Chords of a circle having the same length are all at the same distance from the centre of the circle.

Answer:

14. Two parallel chords of lengths 10 cm and 24 cm are on the same side of the centre of a circle. The distance between the chords is 7 cm. Find the radius of the circle.



Answer:

15. A right triangle has perpendicular sides 6 cm and 8 cm. Construct its circumcircle, identify its centre, and find its radius.

Answer: