

CBSE CLASS X
Mathematics Standard (041)

QUESTION PAPER

From previous CBSE Board Exam questions

Code: G75YCN**Questions: 98****Maximum Marks: 210****Generated: 2026-06-15 13:05****SELECTIONS USED**

Source	Previous-year board
Subject	Mathematics
Lessons	Circles
Year	2022-2026
Questions selected	98

Composition — Types: 38 MCQ · 27 Short · 14 Very short · 11 Long · 5 Assertion–reason · 2 Case-based · 1 other

Q1. § 6.2 Similar Figures § 6.4 Criteria for Similarity of Triangles

[1]

AB and CD are two chords of a circle intersecting at P. Choose the correct statement from the following:

- (A) $\triangle ADP \sim \triangle CBA$
 (B) $\triangle ADP \sim \triangle BPC$
 (C) $\triangle ADP \sim \triangle BCP$
 (D) $\triangle ADP \sim \triangle CBP$

Previously asked in: 2024 30/2/1 Q11

◆ **Triangles**

6.3 Similarity of Triangles

Angle in a semicircle / inscribed angle theorem

Q2. § 10.1 Introduction § 10.2 Tangent to a Circle

[1]

In the given figure, PA and PB are tangents from external point P to a circle with centre C and Q is any point on the circle. Then the measure of $\angle AQB$ is

- A $62\frac{1}{2}^\circ$
 B 125°
 C 55°
 D 90°

Previously asked in: 2023 30/6/1 Q14

◆ **Circles**

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q3. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[2]

In the given figure, PA is a tangent to the circle drawn from the external point P and PBC is the secant to the circle with BC as diameter. If $\angle AOC = 130^\circ$, then find the measure of $\angle APB$, where O is the centre of the circle.

Previously asked in: 2023 30/6/1 Q24

◆ **Circles**

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q4. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary

[1]

In the given figure, RJ and RL are two tangents to the circle. If $\angle RJJL = 42^\circ$, then the measure of $\angle JOL$ is :

- A 42°
- B 84°
- C 96°
- D 138°

Previously asked in: 2024 30/5/1 Q16

◆ Circles 10.3 Number of Tangents from a Point on a Circle

Q5. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[5]

PQ and PR are two tangents to a circle with centre O and radius 5 cm. AB is another tangent to the circle at C which lies on OP . If $OP = 13$ cm, then find the length AB and PA .

Previously asked in: 2026 30/5/1 Q35

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q6. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[2]

In Fig. 1, AB is diameter of a circle centered at O . BC is tangent to the circle at B . If OP bisects the chord AD and $\angle AOP = 60^\circ$, then find $m\angle C$.

Previously asked in: 2022 30/2/1 Q4(a)

◆ Circles 10.2 Tangent to a Circle Angle in a semicircle and exterior angle relationships
OP bisects chord AD — perpendicular from centre to chord

Q7. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary

[2]

In Fig. 2, XAY is a tangent to the circle centered at O . If $\angle ABO = 40^\circ$, then find $m\angle BAY$ and $m\angle AOB$.

Previously asked in: 2022 30/2/1 Q4(b)

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q8. § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary

[3]

Draw two concentric circles of radii 2 cm and 5 cm. From a point on the outer circle, construct a pair of tangents to the inner circle.

Previously asked in: 2022 30/2/1 Q7

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q9. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[4]

In Fig. 4, PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q meet at a point T . Find the length of TP .

Previously asked in: 2022 30/2/1 Q11

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q10. § 10.1 Introduction § 10.4 Summary**[1]**

In Q. No. 19 and 20 a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A) : The tangents drawn at the end points of a diameter of a circle, are parallel.

Reason (R) : Diameter of a circle is the longest chord.

- (a) Both, Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of Assertion (A).
- (b) Both, Assertion (A) and Reason (R) are true but Reason (R) is not correct explanation for Assertion (A).
- (c) Assertion (A) is true but Reason (R) is false.
- (d) Assertion (A) is false but Reason (R) is true.

Previously asked in: 2024 30/1/1 Q19

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q11. § 10.1 Introduction § 10.4 Summary**[2]**

In Fig. 1, there are two concentric circles with centre O. If ARC and AQB are tangents to the smaller circle from the point A lying on the larger circle, find the length of AC, if AQ = 5 cm.

Previously asked in: 2022 30/4/1 Q5

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q12. § 10.1 Introduction**[1]**

In the given figure, the quadrilateral PQRS circumscribes a circle. Here PA + CS is equal to:

- (a) QR
- (b) PR
- (c) PS
- (d) PQ

Previously asked in: 2023 30/2/1 Q15

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q13. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[3]**

Construct a pair of tangents to a circle of radius 4 cm which are inclined to each other at an angle of 60° .

Previously asked in: 2022 30/4/1 Q7

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q14. § 10.4 Summary**[1]**

Assertion (A): A tangent to a circle is perpendicular to the radius through the point of contact.

Reason (R): The lengths of tangents drawn from an external point to a circle are equal.

Select the correct answer from the codes (a), (b), (c) and (d) as given below.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2023 30/2/1 Q19

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q15. § 10.1 Introduction

[4]

In Fig.-2, if a circle touches the side QR of $\triangle PQR$ at S and extended sides PQ and PR at M and N, respectively, then prove that $PM = \frac{1}{2}(PQ + QR + PR)$.

Previously asked in: 2022 30/4/1 Q11(a)

◆ Circles

10.2 Tangent to a Circle

Q16. § 10.1 Introduction § 10.2 Tangent to a Circle

[3]

In the given figure, AB is a diameter of the circle with centre O. AQ, BP and PQ are tangents to the circle. Prove that $\angle POQ = 90^\circ$.

Previously asked in: 2024 30/1/1 Q30(A)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q17. § 10.1 Introduction § 10.4 Summary

[3]

A circle with centre O and radius 8 cm is inscribed in a quadrilateral ABCD in which P, Q, R, S are the points of contact as shown. If AD is perpendicular to DC, BC = 30 cm and BS = 24 cm, then find the length DC.

Previously asked in: 2024 30/1/1 Q30(B)

◆ Circles

10.2 Tangent to a Circle

Q18. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[2]

In the given figure, O is the centre of the circle. AB and AC are tangents drawn to the circle from point A. If $\angle BAC = 65^\circ$, then find the measure of $\angle BOC$.

Previously asked in: 2023 30/2/1 Q25

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q19. § 10.1 Introduction § 10.2 Tangent to a Circle

[3]

In the given figure, O is the centre of the circle and QPR is a tangent to it at P. Prove that $\angle QAP + \angle APR = 90^\circ$.

Previously asked in: 2023 30/2/1 Q31

◆ Circles

10.2 Tangent to a Circle

Q20. § 10.1 Introduction § 10.2 Tangent to a Circle

[1]

In the given figure, PQ is a tangent to the circle with centre O. If $\angle OPQ = x$, $\angle POQ = y$, then $x + y$ is :

- (a) 45°
- (b) 90°
- (c) 60°
- (d) 180°

Previously asked in: 2023 30/4/1 Q14

◆ Circles

10.2 Tangent to a Circle

Q21. § 10.4 Summary**[1]**

In the given figure, TA is a tangent to the circle with centre O such that $OT = 4$ cm, $\angle OTA = 30^\circ$, then the length of TA is :

- (a) $2\sqrt{3}$ cm
- (b) 2 cm
- (c) $2\sqrt{2}$ cm
- (d) $\sqrt{3}$ cm

Previously asked in: 2023 30/4/1 Q15

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q22. § 10.1 Introduction § 10.4 Summary**[3]**

Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

Previously asked in: 2023 30/4/1 Q30

◆ Circles

10.2 Tangent to a Circle

Q23. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, AC and AB are tangents to a circle centered at O. If $\angle COD = 120^\circ$, then $\angle BAO$ is equal to :

- (a) 30°
- (b) 60°
- (c) 45°
- (d) 90°

Previously asked in: 2023 30/5/1 Q16

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q24. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[2]**

In the given figure, PT is a tangent to the circle centered at O. OC is perpendicular to chord AB. Prove that $PA \cdot PB = PC^2 - AC^2$.

Previously asked in: 2023 30/5/1 Q22

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q25. § 10.1 Introduction § 10.4 Summary**[5]**

A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC are of lengths 10 cm and 8 cm respectively. Find the lengths of the sides AB and AC, if it is given that the area of $\triangle ABC = 90$ cm².

Previously asked in: 2023 30/5/1 Q33 (OR-1)

◆ Circles

10.2 Tangent to a Circle

Q26. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[5]**

Two circles with centres O and O' of radii 6 cm and 8 cm, respectively intersect at two points P and Q such that OP and O'P are tangents to the two circles. Find the length of the common chord PQ.

Previously asked in: 2023 30/5/1 Q33 (OR-2)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Common Chord of Two Intersecting Circles

Q27. § 10.1 Introduction § 10.4 Summary**[2]**

Two concentric circles are of radii 4 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

Previously asked in: 2022 30/1/1 Q6

◆ Circles 10.2 Tangent to a Circle

Q28. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[3]**

Draw a circle of radius 3 cm. Take two points P and Q on one of its extended diameter each at a distance of 7 cm from its centre. Construct tangents to the circle from these two points P and Q.

Previously asked in: 2022 30/1/1 Q8

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q29. § 10.1 Introduction § 10.2 Tangent to a Circle**[2]**

In Figure 2, PQ and PR are tangents to the circle centred at O. If $\angle OPR = 45^\circ$, then prove that ORPQ is a square.

Previously asked in: 2022 30/3/1 Q6

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q30. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[3]**

Draw a circle of radius 3 cm. From a point P lying outside the circle at a distance of 6 cm from its centre, construct two tangents PA and PB to the circle.

Previously asked in: 2022 30/3/1 Q7(b) (OR-2)

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q31. § 10.4 Summary**[4]**

In Figure 4, O is centre of a circle of radius 5 cm. PA and BC are tangents to the circle at A and B respectively. If $OP = 13$ cm, then find the length of tangents PA and BC.

Previously asked in: 2022 30/3/1 Q11(b) (OR-2)

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q32. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

If PQ and PR are tangents to the circle with centre O and radius 4 cm such that $\angle QPR = 90^\circ$, then the length OP is

- A 4 cm
- B $4\sqrt{2}$ cm
- C 8 cm
- D $2\sqrt{2}$ cm

Previously asked in: 2026 30/4/1 Q4

◆ Circles 10.3 Number of Tangents from a Point on a Circle

Q33. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle**[1]**

PQ is tangent to a circle with centre O. If $\angle POR = 65^\circ$, then $m\widehat{PTR}$ is

- A 65°
- B 58.5°
- C 57.5°
- D 45°

Previously asked in: 2026 30/4/1 Q14

◆ Circles 10.2 Tangent to a Circle

Q34. § 10.1 Introduction § 10.2 Tangent to a Circle**[1]**

If TP and TQ are two tangents to a circle with centre O from an external point T so that $\angle POQ = 120^\circ$, then $\angle PTQ$ is equal to :

- (a) 60°
- (b) 70°
- (c) 80°
- (d) 90°

Previously asked in: 2026 30/1/1 Q12

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q35. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, PA is a tangent from an external point P to a circle with centre O. If $\angle POB = 125^\circ$, then $\angle APO$ is equal to :

- (a) 25°
- (b) 65°
- (c) 90°
- (d) 35°

Previously asked in: 2026 30/1/1 Q13

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q36. § 10.4 Summary**[2]**

Two concentric circles are of radii 5 cm and 4 cm. Find the length of the chord of the larger circle which touches the smaller circle.

Previously asked in: 2026 30/1/1 Q25

◆ Circles

10.2 Tangent to a Circle

Q37. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[3]**

In the given figure, $\triangle ABC$ is a right triangle in which $\angle B = 90^\circ$, AB = 4 cm and BC = 3 cm. Find the radius of the circle inscribed in the triangle ABC.

Previously asked in: 2026 30/1/1 Q29(A)

◆ Circles

10.2 Tangent to a Circle

Q38. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[5]**

In the given figure, TP and TQ are tangents to a circle with centre M, touching another circle with centre N at A and B respectively. It is given that MQ = 13 cm, NB = 8 cm, BQ = 35 cm and TP = 80 cm.

- (i) Name the quadrilateral MQBN. [1]
- (ii) Is MN parallel to PA? Justify your answer. [1]
- (iii) Find length TB. [1]
- (iv) Find length MN. [2]

Previously asked in: 2026 30/4/1 Q33

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q39. § 10.1 Introduction § 10.2 Tangent to a Circle**[3]**

In the given figure, if a circle touches the side QR of $\triangle PQR$ at S and extended sides PQ and PR at M and N respectively, then prove that : $PM = \frac{1}{2} (PQ + QR + PR)$

Previously asked in: 2026 30/1/1 Q29(B)

♦ Circles 10.3 Number of Tangents from a Point on a Circle

Q40. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, PA and PB are tangents to a circle centred at O . If $\angle OAB = 15^\circ$, then $\angle APB$ equals :

- A 30°
- B 15°
- C 45°
- D 10°

Previously asked in: 2026 30/2/1 Q13

♦ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q41. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, PA and PB are tangents to a circle centred at O . If $\angle AOB = 130^\circ$, then $\angle APB$ is equal to :

- A 130°
- B 50°
- C 120°
- D 90°

Previously asked in: 2026 30/2/1 Q14

♦ Circles 10.3 Number of Tangents from a Point on a Circle

Q42. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[1]**

The tangents drawn at the extremities of the diameter of a circle are always:

- A parallel
- B perpendicular
- C equal
- D intersecting

Previously asked in: 2025 30/1/1 Q7

♦ Circles 10.2 Tangent to a Circle

Q43. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle**[1]**

In the given figure, PA is a tangent from an external point P to a circle with centre O . If $\angle POB = 115^\circ$, then $\angle APO$ is equal to:

- A 25°
- B 65°
- C 90°
- D 35°

Previously asked in: 2025 30/1/1 Q16

♦ Circles 10.2 Tangent to a Circle

Q44. § 10.1 Introduction § 10.2 Tangent to a Circle**[2]**

In the given figure, O is the centre of the circle. PQ and PR are tangents. Show that the quadrilateral $PQOR$ is cyclic.

Previously asked in: 2026 30/2/1 Q25

♦ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q45. § 10.4 Summary

[3]

Prove that the lengths of tangents drawn from an external point to a circle are equal.

Previously asked in: 2026 30/2/1 Q29(a)

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q46. § 10.1 Introduction § 10.2 Tangent to a Circle

[3]

Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$.

Previously asked in: 2026 30/2/1 Q29(b); 2023 30/1/1 Q29(a) (OR-1); 2023 30/6/1 Q32(A) – 3×

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q47. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[2]

A person is standing at P outside a circular ground at a distance of 26 m from the centre of the ground. He found that his distances from the points A and B on the ground are 10 m (PA and PB are tangents to the circle). Find the radius of the circular ground.

Previously asked in: 2025 30/1/1 Q25

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q48. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[3]

In the given figure, O is the centre of the circle and BCD is tangent to it at C . Prove that $\angle BAC + \angle ACD = 90^\circ$.

Previously asked in: 2025 30/1/1 Q26 (OR-1)

◆ Circles

10.2 Tangent to a Circle

Angle in a semicircle / inscribed angle theorem

Q49. § 10.1 Introduction § 10.2 Tangent to a Circle

[3]

Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

Previously asked in: 2025 30/1/1 Q26 (OR-2)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q50. § 10.4 Summary

[1]

In the given figure, PT is a tangent to the circle with centre O and radius r . If $\angle POT = 45^\circ$, then the length of OP is :

- A $r\sqrt{2}$
- B $\sqrt{2}r$
- C $2r$
- D r^2

Previously asked in: 2026 30/3/1 Q12

◆ Circles

10.2 Tangent to a Circle

Q51. § 10.2 Tangent to a Circle § 10.4 Summary

[1]

In the given figure, RS is the tangent to the circle at the point L and MN is the diameter. If $\angle NML = 30^\circ$, then $\angle RLM$ is :

- A 30°
- B 60°
- C 90°
- D 120°

Previously asked in: 2025 30/2/1 Q7

◆ Circles

10.2 Tangent to a Circle

Q52. § 10.4 Summary

[1]

Directions: Select the correct answer from the codes (A), (B), (C) and (D). Assertion (A): Radius is the smallest distance of a tangent from the centre of the circle. Reason (R): Radius is perpendicular to the tangent.

A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

C Assertion (A) is true, but Reason (R) is false.

D Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2026 30/3/1 Q19

◆ Circles

10.2 Tangent to a Circle

Q53. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle

[3]

Two tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$.

Previously asked in: 2026 30/3/1 Q31(a)

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q54. § 10.4 Summary

[3]

In the given figure, PA is the tangent to the circle with centre O such that OA = 10 cm, AB = 8 cm and $AB \perp OP$. Find the length of PB.

Previously asked in: 2026 30/3/1 Q31(b)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q55. § 10.1 Introduction § 10.4 Summary

[2]

At point A on the diameter AB of a circle of radius 10 cm, tangent XAY is drawn to the circle. Find the length of the chord CD parallel to XY at a distance of 16 cm from A.

Previously asked in: 2025 30/2/1 Q25

◆ Circles

10.2 Tangent to a Circle

7.2 Distance Formula

Q56. § 10.1 Introduction § 10.2 Tangent to a Circle

[3]

Prove that the parallelogram circumscribing a circle is a rhombus.

Previously asked in: 2025 30/2/1 Q26 (OR-1); 2024 30/4/1 Q31; 2024 30/5/1 Q28 – 3×

◆ Circles

10.2 Tangent to a Circle

Q57. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[3]

Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre.

Previously asked in: 2025 30/2/1 Q26 (OR-2); 2023 30/4/1 Q28 – 2×

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q58. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[1]

In the adjoining figure, AB is the chord of the larger circle touching the smaller circle. The centre of both the circles is O. If $AB = 2r$ and $OP = r$, then the radius of larger circle is :

(a) $2r$

(b) $3r$

(c) $2\sqrt{2}r$

(d) $\sqrt{2}r$

Previously asked in: 2025 30/4/1 Q14

◆ Circles

10.2 Tangent to a Circle

Q59. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary

[1]

If tangents PA and PB drawn from an external point P to the circle with centre O are inclined to each other at an angle of 80° as shown in the given figure, then the measure of $\angle POA$ is:

- A 40°
- B 50°
- C 60°
- D 80°

Previously asked in: 2025 30/3/1 Q8

◆ Circles 10.3 Number of Tangents from a Point on a Circle

Q60. § 10.4 Summary

[1]

A statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A): Tangents drawn at the end points of a diameter of a circle are always parallel to each other.

Reason (R): The lengths of tangents drawn to a circle from a point outside the circle are always equal.

- (a) Both, Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of Assertion (A).
- (b) Both, Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true but Reason (R) is false.
- (d) Assertion (A) is false but Reason (R) is true.

Previously asked in: 2025 30/4/1 Q20

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q61. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary

[1]

Assertion (A): If two tangents are drawn to a circle from an external point, then they subtend equal angles at the centre of the circle.

Reason (R): A parallelogram circumscribing a circle is a rhombus.

Select the correct answer from the codes (A), (B), (C) and (D) given below:

- A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
- B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
- C Assertion (A) is true, but Reason (R) is false.
- D Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2025 30/3/1 Q20

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q62.

[3]

Rectangle ABCD circumscribes the circle of radius 10 cm. Prove that ABCD is a square. Hence, find the perimeter of ABCD.

Previously asked in: 2025 30/4/1 Q31

◆ Circles 10.2 Tangent to a Circle

Q63. § 10.2 Tangent to a Circle § 10.4 Summary

[2]

Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

Previously asked in: 2025 30/3/1 Q25; 2024 30/5/1 Q21(b) (OR-2) — 2×

◆ Circles 10.2 Tangent to a Circle

Q64. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[3]**

In the given figure, PC is a tangent to the circle at C. AOB is the diameter which when extended meets the tangent at P. Find $\angle BCO$ and $\angle CBA$, if $\angle PCA = 110^\circ$.

Previously asked in: 2025 30/3/1 Q31

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q65. § 10.1 Introduction § 10.2 Tangent to a Circle**[1]**

In the adjoining figure, PA and PB are tangents to a circle with centre O. The measure of angle APB is

- A 210°
- B 150°
- C 105°
- D 30°

Previously asked in: 2025 30/5/1 Q11

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q66. § 10.1 Introduction § 10.4 Summary**[1]**

In the adjoining figure, the sum of radii of two concentric circles is 16 cm. The length of chord AB which touches the inner circle at P is 16 cm. The difference of the radii of the given circles is

- A 8 cm
- B 4 cm
- C 2 cm
- D 3 cm

Previously asked in: 2025 30/5/1 Q14

◆ Circles

10.2 Tangent to a Circle

Q67. § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, tangents PA and PB to the circle centred at O, from point P are perpendicular to each other. If $PA = 5$ cm, then length of AB is equal to

- (A) 5 cm
- (B) $5\sqrt{2}$ cm
- (C) $2\sqrt{5}$ cm
- (D) 10 cm

Previously asked in: 2024 30/2/1 Q14

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q68. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, AT is tangent to a circle centred at O. If $\angle CAT = 40^\circ$, then $\angle CBA$ is equal to

- (A) 70°
- (B) 50°
- (C) 65°
- (D) 40°

Previously asked in: 2024 30/2/1 Q17

◆ Circles

10.2 Tangent to a Circle

Q69. § 10.1 Introduction § 10.2 Tangent to a Circle**[3]**

In the adjoining figure, XY and X'Y' are parallel tangents to a circle with centre O. Another tangent AB touches the circle at C intersecting XY at A and X'Y' at B. Prove that AB subtends right angle at the centre of the circle; or $\angle AOB = 90^\circ$.

Previously asked in: 2025 30/5/1 Q31

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q70. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[2]**

In the given figure, AB and CD are tangents to a circle centred at O. Is $\angle BAC = \angle DCA$? Justify your answer.

Previously asked in: 2024 30/2/1 Q24

◆ Circles

10.2 Tangent to a Circle

Alternate Interior Angles with Transversal across Parallel Tangents

Q71. § 10.1 Introduction § 10.2 Tangent to a Circle**[3]**

In the given figure, PQ is tangent to a circle centred at O and $\angle BAQ = 30^\circ$; show that $BP = BQ$.

Previously asked in: 2024 30/2/1 Q28(a) (OR-1)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q72. § 10.1 Introduction § 10.2 Tangent to a Circle**[3]**

In the given figure, AB, BC, CD and DA are tangents to the circle with centre O forming a quadrilateral ABCD. Show that $\angle AOB + \angle COD = 180^\circ$.

Previously asked in: 2024 30/2/1 Q28(b) (OR-2)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q73. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the adjoining figure, PA and PB are tangents to a circle with centre O such that $\angle P = 90^\circ$. If $AB = 3\sqrt{2}$ cm, then the diameter of the circle is

- A $3\sqrt{2}$ cm
- B $6\sqrt{2}$ cm
- C 3 cm
- D 6 cm

Previously asked in: 2025 30/6/1 Q9

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q74. § 10.1 Introduction § 10.4 Summary**[1]**

For a circle with centre O and radius 5 cm, which of the following statements is true ?

P : Distance between every pair of parallel tangents is 5 cm.

Q : Distance between every pair of parallel tangents is 10 cm.

R : Distance between every pair of parallel tangents must be between 5 cm and 10 cm.

S : There does not exist a point outside the circle from where length of tangent is 5 cm.

- A P
- B Q
- C R
- D S

Previously asked in: 2025 30/6/1 Q10

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q75. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[1]**

In the adjoining figure, TS is a tangent to a circle with centre O. The value of $2x^\circ$ is

- A 22.5
- B 45
- C 67.5
- D 90

Previously asked in: 2025 30/6/1 Q11

◆ Circles 10.2 Tangent to a Circle

Q76. § 10.3 Number of Tangents from a Point on a Circle**[1]**

Maximum number of common tangents that can be drawn to two circles intersecting at two distinct points is :

- A 4
- B 3
- C 2
- D 1

Previously asked in: 2024 30/3/1 Q9

◆ Circles 10.3 Number of Tangents from a Point on a Circle

Q77. § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[1]**

In the given figure, if PT is a tangent to a circle with centre O and $\angle TPO = 35^\circ$, then the measure of $\angle x$ is :

- A 110°
- B 115°
- C 120°
- D 125°

Previously asked in: 2024 30/3/1 Q10

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q78. § 10.4 Summary**[1]**

In the given figure, O is the centre of the circle. MN is the chord and the tangent ML at point M makes an angle of 70° with MN. The measure of $\angle MON$ is :

- A 120°
- B 140°
- C 70°
- D 90°

Previously asked in: 2024 30/3/1 Q18

◆ Circles 10.2 Tangent to a Circle

Q79. § 10.2 Tangent to a Circle**[3]**

Prove that the tangents drawn at the end points of a chord of a circle makes equal angles with the chord.

Previously asked in: 2024 30/3/1 Q31

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle

Q80. § 10.1 Introduction § 10.2 Tangent to a Circle**[1]**

In the given figure, PQ is tangent to the circle centred at O. If $\angle AOB = 95^\circ$, then the measure of $\angle ABQ$ will be

- A 47.5°
- B 42.5°
- C 85°
- D 95°

Previously asked in: 2023 30/1/1 Q5

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q81. § 10.2 Tangent to a Circle § 10.3 Number of Tangents from a Point on a Circle § 10.4 Summary**[1]**

In the given figure, AB and AC are tangents to the circle. If $\angle ABC = 42^\circ$, then the measure of $\angle BAC$ is :

- A 96°
- B 42°
- C 106°
- D 86°

Previously asked in: 2024 30/4/1 Q15

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q82. § 10.4 Summary**[1]**

In the given figure, QR is a common tangent to the two given circles touching externally at A. The tangent at A meets QR at P. If AP = 4.2 cm, then the length of QR is :

- A 4.2 cm
- B 2.1 cm
- C 8.4 cm
- D 6.3 cm

Previously asked in: 2024 30/4/1 Q18

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q83. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[3]**

In the given figure, a circle is inscribed in a quadrilateral ABCD in which $\angle B = 90^\circ$. If AD = 17 cm, AB = 20 cm and DS = 3 cm, then find the radius of the circle.

Previously asked in: 2023 30/1/1 Q29(b) (OR-2)

◆ Circles

10.2 Tangent to a Circle

Q84. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[2]**

In the given figure, O is the centre of the circle. If $\angle AOB = 145^\circ$, then find the value of x.

Previously asked in: 2024 30/4/1 Q24

◆ Circles

10.3 Number of Tangents from a Point on a Circle

Q85. § 10.2 Tangent to a Circle § 10.4 Summary

[4]

The discus throw is an event in which an athlete attempts to throw a discus. The athlete spins anti-clockwise around one and a half times through a circle, then releases the throw. When released, the discus travels along tangent to the circular spin orbit. In the given figure, AB is one such tangent to a circle of radius 75 cm. Point O is centre of the circle and $\angle ABO = 30^\circ$. PQ is parallel to OA.

Based on above information, answer the following questions.

- (a) find the length of AB. [1]
- (b) find the length of OB. [1]
- (c) find the length of AP. [2]

Previously asked in: 2023 30/1/1 Q38

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

Q86. § 10.1 Introduction § 10.2 Tangent to a Circle

[1]

In the given figure, PQ is tangent to the circle with centre O. S is a point on the circle such that $\angle SQT = 55^\circ$. The $m\angle QPS$ is

- (A) 55°
- (B) 20°
- (C) 35°
- (D) 70°

Previously asked in: 2026 30/5/1 Q4

◆ Circles

10.2 Tangent to a Circle

Q87. § 10.1 Introduction

[1]

A chord of a circle of radius 10 cm subtends a right angle at its centre. The length of the chord (in cm) is :

- A $5\sqrt{2}$
- B $10\sqrt{2}$
- C $\frac{5}{\sqrt{2}}$
- D 5

Previously asked in: 2024 30/5/1 Q12

◆ Circles

Length of a chord using coordinate geometry

Q88. § 10.4 Summary

[2]

If two tangents inclined at an angle of 60° are drawn to a circle of radius 3 cm, then find the length of each tangent.

Previously asked in: 2024 30/5/1 Q21(a) (OR-1)

◆ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

8.3 Trigonometric Ratios of Some Specific Angles

Q89. § 10.1 Introduction § 10.2 Tangent to a Circle

[5]

A circle touches the side BC of a $\triangle ABC$ at a point P and touches AB and AC when produced at Q and R respectively. Show that $AQ = \frac{1}{2}$ (Perimeter of $\triangle ABC$).

Previously asked in: 2023 30/6/1 Q32(B)

◆ Circles

Tangent lengths from an external point – perimeter proof

Q90. § 10.1 Introduction § 10.4 Summary**[4]**

In Fig. 3, a triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 6 cm and 8 cm respectively. If the area of $\triangle ABC$ is 84 cm^2 , find the lengths of sides AB and AC.

Previously asked in: 2022 30/4/1 Q11(b)

◆ Circles

Area of triangle using inradius and semi-perimeter

Tangent lengths from an external point (circumscribed triangle)

Q91. § 10.1 Introduction § 10.4 Summary**[4]**

A backyard is in the shape of a triangle ABC with right angle at B. $AB = 7 \text{ m}$ and $BC = 15 \text{ m}$. A circular pit was dug inside it such that it touches the walls AC, BC and AB at P, Q and R respectively such that $AP = x \text{ m}$.

Based on the above information, answer the following questions :

- (i) Find the length of AR in terms of x . [1]
- (ii) Write the type of quadrilateral BQOR. [1]
- (iii) Find the length PC in terms of x and hence find the value of x . [2]

Previously asked in: 2024 30/1/1 Q38

◆ Circles

Incircle of a right triangle / tangent-radius perpendicularity

Tangent lengths from an external point

Tangent to a circle – properties

Q92. § 10.4 Summary**[1]**

In the given figure, $AB = BC = 10 \text{ cm}$. If $AC = 7 \text{ cm}$, then the length of BP is :

- (a) $3 \cdot 5 \text{ cm}$
- (b) 7 cm
- (c) $6 \cdot 5 \text{ cm}$
- (d) 5 cm

Previously asked in: 2023 30/5/1 Q8

◆ Circles

Tangent from an external point – equal tangent lengths

Q93. § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, AB is a tangent to the circle centered at O . If $OA = 6 \text{ cm}$ and $\angle OAB = 30^\circ$, then the radius of the circle is :

- (a) 3 cm
- (b) $3\sqrt{3} \text{ cm}$
- (c) 2 cm
- (d) $\sqrt{3} \text{ cm}$

Previously asked in: 2023 30/5/1 Q11

◆ Circles

10.2 Tangent to a Circle

8.3 Trigonometric Ratios of Some Specific Angles

Q94. § 10.2 Tangent to a Circle § 10.4 Summary**[1]**

In the given figure, PQ and PR are tangents to a circle with centre O and radius 3 cm. If $\angle QPR = 60^\circ$, then the length of each tangent is :

- A $3\sqrt{3}$ cm
 B 3 cm
 C 6 cm
 D $\sqrt{3}$ cm

Previously asked in: 2026 30/3/1 Q2

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle 8.3 Trigonometric Ratios of Some Specific Angles

Q95. § 10.1 Introduction § 10.4 Summary**[1]**

A parallelogram having one of its sides 5 cm circumscribes a circle. The perimeter of parallelogram is :

- (a) 20 cm
 (b) less than 20 cm
 (c) more than 20 cm but less than 40 cm
 (d) 40 cm

Previously asked in: 2025 30/4/1 Q15

◆ Circles Tangents to a Circle – Equal tangent lengths from an external point (circumscribed polygon)

Q96. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[3]**

In the adjoining figure, TP and TQ are tangents drawn to a circle with centre O. If $\angle OPQ = 15^\circ$ and $\angle PTQ = \theta$, then find the value of $\sin 2\theta$.

Previously asked in: 2025 30/6/1 Q31

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle 8.3 Trigonometric Ratios of Some Specific Angles

Q97. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[4]**

In Figure 1, a triangle ABC with $\angle B = 90^\circ$ is shown. Taking AB as diameter, a circle has been drawn intersecting AC at point P. Prove that the tangent drawn at point P bisects BC.

Previously asked in: 2022 30/1/1 Q12

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle 6.3 Similarity of Triangles

Q98. § 10.1 Introduction**[4]**

In Figure 3, two circles with centres at O and O' of radii 2r and r respectively, touch each other internally at A. A chord AB of the bigger circle meets the smaller circle at C. Show that C bisects AB.

Previously asked in: 2022 30/3/1 Q11(a) (OR-1)

◆ Circles 10.2 Tangent to a Circle 10.3 Number of Tangents from a Point on a Circle 6.3 Similarity of Triangles

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