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CBSE Class 10 · Maths

Circles

10 most probable questions for Boards 2027

Q1. 1 mark · Multiple choice

A line that has exactly one common point with a circle is called a:
(A) chord
(B) secant
(C) tangent
(D) non-intersecting line

Answer

(c) tangent — a tangent to a circle has exactly one common point with the circle.

Q2. 2 marks · Short answer

State the relationship between the tangent at a point P on a circle and the radius drawn to P.

Answer

The tangent at P is perpendicular to the radius OP through the point of contact. The tangent meets the circle only at P, and OP is called the normal to the circle.

Q3. 3 marks · Medium answer

What is meant by the length of a tangent from an external point to a circle? Identify the endpoints of the segment whose length is being considered.

Answer

1. The length of a tangent from an external point to a circle is the length of the segment joining the external point to its point of contact with the circle.
2. For a tangent named PT, P is the external point and T is the point where the tangent touches the circle. Thus, the measured segment extends from P to T.

Q4. 4 marks · Long answer

From an external point P, tangents PQ and PR are drawn to a circle with centre O. Prove that OP bisects ∠QPR.

Answer

The two tangents from external point P meet radii OQ and OR at their points of contact, and each radius is perpendicular to its tangent.
1. Join OQ, OR and OP. Since OQ and OR are radii to the points of contact, and a radius is perpendicular to the tangent at its point of contact, ∠OQP and ∠ORP are right angles. Thus, the two triangles are right-angled at Q and R.
2. In right triangles OQP and ORP, OQ = OR because they are radii of the same circle, and OP = OP as the common hypotenuse.

3. Therefore, $\Delta OQP \cong \Delta ORP$ by the RHS congruence criterion. By corresponding parts of congruent triangles, $\angle OPQ = \angle OPR$.
Thus, OP bisects $\angle QPR$ because it divides the angle into two equal angles.

Q5. 5 marks · Long answer

(5 marks) Explain why at most two tangents to a circle can be parallel to a given secant. State the other name for the radius through the point of contact. Explain why this radius is perpendicular to the tangent, using its relation to the shortest distance from the centre to the tangent line.

Answer

A tangent touches a circle at one point and has a fixed relation to its radius.
1. Draw parallel lines on both sides of the given secant. Their chords become shorter as the lines move away; the chord reaches zero at one limiting position on each side. Thus only two parallel tangents are possible.
2. The line containing the radius through the point of contact is called the normal to the circle there.
3. For tangent XY at P, let OP be the radius. Any other point Q on XY lies outside the circle; otherwise XY would be a secant. Hence $OQ > OP$, so OP is the shortest distance from O to XY. The shortest distance from a point to a line is perpendicular to it; therefore $OP \perp XY$.
Therefore, at most two tangents parallel to a given secant exist, and the radius at the point of contact is perpendicular to the tangent.

Q6. 1 mark · Multiple choice

A line intersects a circle at two distinct points. What is the line called with respect to the circle?
(A) tangent
(B) secant
(C) radius
(D) non-intersecting line

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/circles

Q7. 2 marks · Short answer

Explain how a tangent to a circle can be viewed as a limiting case of a secant.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/circles

Q8. 1 mark · Multiple choice

How many tangents can be drawn to a circle at a given point on the circle?
(A) None
(B) Exactly one
(C) Exactly two
(D) Infinitely many

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/circles

Q9. 2 marks · Short answer

State the number of tangents to a circle that can be drawn through a point lying (i) inside the circle, (ii) on the circle, and (iii) outside the circle.

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Q10. 1 mark · Multiple choice

What is the common point of a tangent and a circle called?

(A) Centre

(B) Point of contact

(C) Midpoint

(D) Endpoint of a diameter

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