CLASS 10 · MATHEMATICS · CHAPTER 10

Circles - Exercise 10.1

Exercise 10.1 with independently verified solutions.

CHAPTER	RESOURCE	SOURCE
Circles	NCERT Exercises	NCERT Mathematics, Reprint 2026-27

PART 1

Verified NCERT questions and solutions

Verified NCERT questions and solutions

Solutions are checked independently and follow the supplied NCERT chapter edition.

QUESTION

Question 1

number of tangents

How many tangents can a circle have?

Solution

Board-exam working:

A tangent can be drawn at every point of a circle.

A circle contains infinitely many points.

$$\therefore \text{ a circle has infinitely many tangents}$$

Final answer

Infinitely many tangents.

QUESTION

Question 2

circle terminology · fill in the blanks

Fill in the blanks: (i) A tangent to a circle intersects it in ___ point(s). (ii) A line intersecting a circle in two points is called a ___. (iii) A circle can have at most ___ parallel tangents. (iv) The common point of a tangent and the circle is called the ___.

Solution

Board-exam working:

(i) A tangent touches the circle at exactly one point.

Answer: one

(ii) A line meeting a circle at two points is a secant.

Answer: secant

(iii) Two tangents can be parallel, one on each side of the circle.

Answer: two

(iv) Their common point is the point of contact.

Answer: point of contact

Final answer

(i) one; (ii) secant; (iii) two; (iv) point of contact.

QUESTION

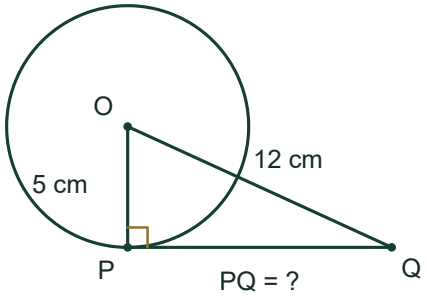
Question 3

Pythagoras theorem · tangent length

A tangent PQ at point P of a circle of radius 5 cm meets a line through the centre O at Q, where OQ = 12 cm. Find PQ. Options: (A) 12 cm, (B) 13 cm, (C) 8.5 cm, (D) √119 cm.

Solution

Board-exam working:



OP ⊥ PQ

Radius and tangent form a right triangle — solution sketch (not to scale).

The radius to the point of contact is perpendicular to the tangent.

$$OP \perp PQ$$

In right triangle OPQ:

$$OQ^2 = OP^2 + PQ^2$$

$$12^2 = 5^2 + PQ^2$$

$$PQ^2 = 144 - 25 = 119$$

$$PQ = \sqrt{119}\ \text{cm}$$

Final answer

Option (D): $\sqrt{119}$ cm.

QUESTION

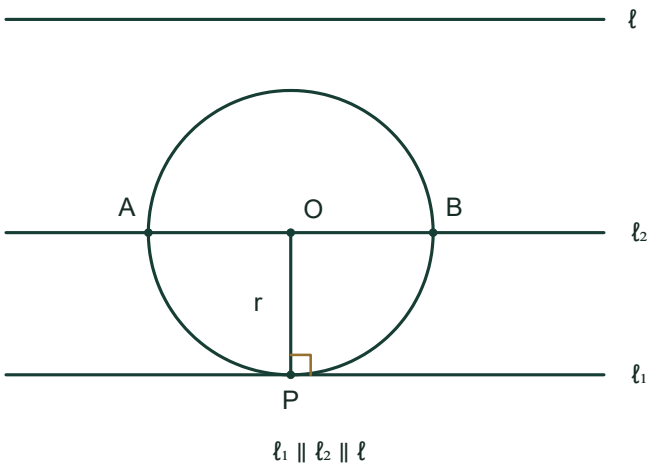
Question 4

construction · tangent and secant

Draw a circle and two lines parallel to a given line such that one is a tangent and the other is a secant to the circle.

Solution

Board-exam working:



Parallel tangent and secant — solution sketch (not to scale).

Draw a circle with centre O and radius r. Let ℓ be the given line.

Draw a line ℓ_1 parallel to ℓ at perpendicular distance r from O.

$$d(O, \ell_1) = r$$

Since ℓ_1 meets the circle at exactly one point, ℓ_1 is a tangent.

Draw another line ℓ_2 parallel to ℓ with its perpendicular distance from O less than r.

$$d(O, \ell_2) < r$$

The line ℓ_2 cuts the circle at two points, so ℓ_2 is a secant.

$$\ell_1 \parallel \ell_2 \parallel \ell$$

Final answer

The required parallel lines are ℓ_1, the tangent, and ℓ_2, the secant.