Circles

Standard difficulty · 20 questions · 40 marks · Time: 38 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. From a point P, 26 cm from the centre O of a circle of radius 24 cm, a tangent PQ is drawn. The length of PQ is:
   (a) 50 cm **(b)** 2 cm **(c)** 11 cm **(d)** 10 cm

2. The tangent from a point P to a circle of radius 24 cm is 18 cm long. The distance of P from the centre is:
   (a) 42 cm **(b)** 6 cm **(c)** 30 cm **(d)** 31 cm

3. PA and PB are tangents from P to a circle with centre O. If ∠APB = 115°, then ∠AOB is:
   (a) 245° **(b)** 115° **(c)** 32.5° **(d)** 65°

4. PA is a tangent at A to a circle with centre O. If ∠AOP = 72°, then ∠APO is:
   (a) 108° **(b)** 162° **(c)** 72° **(d)** 18°

5. A tangent to a circle meets it at:
   (a) exactly one point **(b)** two points
   (c) no point **(d)** three points

6. Two concentric circles have radii 50 cm and 14 cm. The chord of the larger circle that touches the smaller circle is:
   (a) 72 cm **(b)** 96 cm **(c)** 48 cm **(d)** 36 cm

7. A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 10 cm, BC = 9 cm and CD = 12 cm, then DA is:
   (a) 22 cm **(b)** 10 cm **(c)** 13 cm **(d)** 2 cm

8. Assertion (A): The tangent to a circle of radius 6 cm from a point 10 cm from its centre is 8 cm long.
   Reason (R): The tangent at any point of a circle is perpendicular to the radius through the point of contact.
   (a) Both A and R are true, and R is the correct explanation of A.
   (b) Both A and R are true, but R is not the correct explanation of A.
   (c) A is true, but R is false.
   (d) A is false, but R is true.

Section B — Short answer — 8 × 2 = 16 marks

9. Find the length of the tangent drawn to a circle of radius 105 cm from a point 111 cm from its centre.

10. Tangents PA and PB are drawn from an external point P to a circle with centre O. If $\angle AOB = 155°$, find $\angle APB$.

11. PA and PB are tangents from P to a circle. If $\angle APB = 48°$, find $\angle PAB$.

12. A circle is inscribed in $\triangle ABC$, touching AB, BC and CA at P, Q and R. If AB = 18 cm, BC = 21 cm and CA = 19 cm, find AP, BQ and CR.

13. A chord of the larger of two concentric circles is 24 cm long and touches the smaller circle, whose radius is 16 cm. Find the radius of the larger circle.

14. ABCD circumscribes a circle. AB = 14 cm, BC = 19 cm and CD = 20 cm. Find DA and the perimeter of ABCD.

15. The tangent from a point 45 cm from the centre of a circle is 27 cm long. Find the radius of the circle.

16. From a point P, 50 cm from the centre O of a circle of radius 40 cm, tangents PA and PB are drawn. Find the length of AB.

Section C — Word problems — 4 × 4 = 16 marks

17. A circular park has a radius of 12 m. Isha stands 15 m from its centre and walks in a straight line that just touches the edge of the park. How far does Isha walk to reach the edge?

18. A circular pond touches all three sides of a triangular plot ABC. AB = 35 m, BC = 51 m and CA = 32 m. How far from corner A are the two points where the pond touches the sides?

19. Two tangents drawn from a point P to a circle of radius 17 cm are inclined to each other at 90°. Find the distance OP from the centre and the length of each tangent.

20. A quadrilateral field ABCD has a circular pond that touches all four sides. AB = 29 m, BC = 32 m and CD = 20 m. Find DA, and the cost of fencing the field at Rs 45 per metre.

Want another sheet on this chapter? In the Ambiful Worksheets app every sheet is new, with its answer key, and your child never gets the same question twice.
Scan the code to get the free app, or open **worksheets.ambiful.com/get**

Answer key

Circles · AW-10M-CIR-2026-V1 · For parents — fold back or tear off before handing the sheet to your child.

Q	Answer	Working
1	**(d) 10 cm**	OQ ⊥ PQ, so PQ = $\sqrt{(26^2 - 24^2)} = 10$
2	**(c) 30 cm**	OP = $\sqrt{(24^2 + 18^2)} = 30$
3	**(d) 65°**	∠OAP = ∠OBP = 90°, so ∠AOB = 360° − 180° − 115° = 65°
4	**(d) 18°**	∠OAP = 90°, so ∠APO = 90° − 72° = 18°
5	**(a) exactly one point**	—
6	**(b) 96 cm**	the radius to the point of contact bisects the chord: half-chord = $\sqrt{(50^2 - 14^2)} = 48$
7	**(c) 13 cm**	AB + CD = BC + DA: DA = 10 + 12 − 9 = 13
8	**(a) Both A and R are true, and R is the correct explanation of A.**	A is true: $\sqrt{(10^2 - 6^2)} = 8$. R is true and explains A.
9	**36 cm**	$\sqrt{(111^2 - 105^2)} = \sqrt{1296} = 36$
10	**25°**	OAPB has two right angles, so ∠APB = 180° − 155° = 25°
11	**66°**	PA = PB, so △PAB is isosceles: ∠PAB = (180° − 48°)/2
12	**AP = 8 cm, BQ = 10 cm, CR = 11 cm**	tangents from a point are equal: AP = AR, BP = BQ, CQ = CR; AP = (AB + CA − BC)/2 = 8
13	**20 cm**	half-chord 12; R = $\sqrt{(16^2 + 12^2)} = 20$
14	**DA = 15 cm; perimeter 68 cm**	AB + CD = BC + DA; perimeter = 2(AB + CD)
15	**36 cm**	r = $\sqrt{(45^2 - 27^2)} = 36$
16	**48 cm**	PA = 30; OP bisects AB at right angles, and (1/2) × OA × PA = (1/2) × OP × (AB/2), so AB = 2 × 40 × 30/50
17	**9 m**	the path is a tangent, at right angles to the radius: $\sqrt{(15^2 - 12^2)} = 9$
18	**8 m (on both AB and AC)**	the tangents from A are equal; AP = (AB + AC − BC)/2 = (35 + 32 − 51)/2 = 8
19	**OP = 17√2 cm; each tangent 17 cm**	OP bisects the angle, so ∠APO = 45°; sin 45° = 17/OP and tan 45° = 17/PA
20	**DA = 17 m; Rs 4,410**	AB + CD = BC + DA; perimeter = 98 m

Ambiful Worksheets · worksheets.ambiful.com · Not affiliated with CBSE / NCERT