**JNV**

**MODEL QUESTIONS**

**MATHEMATICS: 10 CIRCLE**

**Class : X**

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| 1 | What is the angle between a tangent to a circle and the radius through the point of contact? Justify your answer. | 1 |
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|  | ANS:     90°. Because radius through point of contact of tangent to a circle is perpendicular to the tangent. |  |
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| 2 | What is the distance between two parallel tangents of a circle of radius 7 cm? | 1 |
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|  | ANS:   |  |  | | --- | --- | | Two parallel tangents of a circle can be drawn only at the end points of the diameter C:\fake\image1.png  l1 || l2 C:\fake\image2.png  Distance between l1 and l2 = AB = Diameter of the circle = 2 × r = 2 × 7 cm = 14 cm | C:\fake\image3.png | |  |
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| 3 | In the given figure, AB, AC and AD are tangents. If AB = 5 cm, find AD. C:\fake\image4.png | 1 |
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|  | ANS:     Given: AB, AC and AD are tangents. AB = 5 cm. To find: AD Sol. AB and AC are tangents from the same point to the circle with centre O. C:\fake\image5.png  AB = AC ...(i) (Length of the tangents from the same external point are equal). AC and AD are tangents from the same point to the circle with centre O. C:\fake\image6.png  AC = AD ...(ii) (Length of the tangents from the same external point are equal) From (i) and (ii) C:\fake\image7.png  AB = AC = AD = 5 cm |  |
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| 4 | In figure, CP and CQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If CP = 11 cm, and BC = 7 cm, then find the length of BR.  C:\fake\image8.png | 2 |
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|  | ANS:     Since CP = CQ = 11cm [Length of the two tangents from same external point] CQ = CB + BQ But BQ = BR Therefore, 11 = 7 + BR C:\fake\image9.pngBR = 4 cm |  |
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| 5 | In figure, ∆ABC is circumscribing a circle. Find the length of BC. C:\fake\image10.png | 2 |
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|  | ANS:     AR = 4 cm Also, AR = AQ C:\fake\image11.pngAQ = 4 cm Now, QC = AC – AQ = 11 cm – 4 cm = 7 cm ...(i) Also, BP = BR C:\fake\image12.png  BP = 3 cm and PC = QC C:\fake\image13.png  PC = 7 cm [From (i)] BC = BP + PC = 3 cm + 7 cm = 10 cm |  |
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| 6 | In figure, a circle touches the side BC of ∆ABC at P and touches AB and AC produced at Q and R respectively. If AQ = 5 cm, find the perimeter of ∆ABC.  C:\fake\image14.png | 2 |
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|  | ANS:     Given: A circle touches the side BC of ∆ABC at P and touches AB and AC produced at Q and R respectively and AQ = 5 cm. To find: Perimeter of ∆ABC. Sol.: AQ and AR are tangents from the same point AQ = AR = 5 cm ...(i) [Tangents from the same external points are equal] BQ and BP are tangents from same point C:\fake\image15.pngBQ = BP ...(ii) CP and CR are also tangents from the same point C:\fake\image16.pngCP = CR ...(iii) In ∆ ABC, Perimeter of ∆ ABC = AB + BC + AC = AB + BP + CP + AC AB + BQ + CR + AC = AQ + AR [From (ii) and (iii)] = 5 cm + 5 cm = 10 cm [From (i)] Perimeter of ∆ ABC = 10 cm |  |
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| 7 | In figure, PA and PB are tangents to the circle with centre O such that C:\fake\image17.pngAPB = 50°. Write the measure of C:\fake\image18.pngOAB.  C:\fake\image19.png | 2 |
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|  | ANS:     In C:\fake\image20.pngAPB, C:\fake\image21.pngBAP = C:\fake\image22.pngABP (angle opp. to equal side) C:\fake\image23.pngBAP = C:\fake\image24.png(180° – C:\fake\image25.pngAPB) = C:\fake\image26.png(130°) = 65° C:\fake\image27.pngOAP = 90° C:\fake\image28.pngOAB = 90° – C:\fake\image29.pngBAP = 90° – 65° = 25° |  |
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| 8 | In figure, a triangle ABC is drawn to circumscribe a circle of radius 3 cm, such that the segments BD and DC are respectively of lengths 6 cm and 9 cm. If the area of C:\fake\image30.pngABC is 54 cm2, then find the lengths of sides AB and AC.  C:\fake\image31.png | 3 |
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|  | ANS:   |  |  | | --- | --- | | Let AF = x cm C:\fake\image32.png  AF = AE = x [tangents from A] Also BD = BF = 6 cm and CD = CE = 9 cm C:\fake\image33.png  AB = (6 + x) cm and AC = (9 + x) cm Area C:\fake\image34.pngABC = Area C:\fake\image35.pngBOC + Area C:\fake\image36.pngCOA + Area C:\fake\image37.pngAOB C:\fake\image38.png  54 = C:\fake\image39.pngBC × OD + C:\fake\image40.pngAC × OE + C:\fake\image41.pngAB × OF C:\fake\image42.png  54 × 2 = 15 × 3 + (6 + x) × 3 + (9 + x) × 3 108 = 45 + 18 + 3x + 27 + 3x 6x = 18  C:\fake\image43.png  x = 3 C:\fake\image44.png  AB = 6 + x = 6 + 3 = 9 cm and AC = 9 + x = 9 + 3 = 12 cm | C:\fake\image45.png | |  |
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| 9 | |  |  | | --- | --- | | A village Panchayt constructed a circular tank to serve as a bird bath. A fencing was made in the shape of a quadrilateral. Sides of the quadrilateral touched the circle as shown in the figure. If AB = 5 m, CD = 6 m, BC = 7 m, then (a) Find AD. (b) What values does village Panchayt depict through this action? | C:\fake\image46.png | | 4 |
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|  | ANS:     (a) Now AB + CD = BC + AD C:\fake\image47.png  5 + 6 = 7 + AD  C:\fake\image48.png  AD = 4 m (b) Care towards nature, love for creature |  |
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