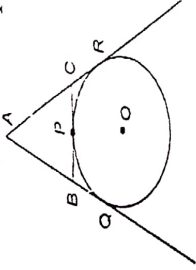


CIRCLE PYQ

1. From a point P which is at a distance of 17 cm from the centre O of a circle of radius 8 cm, the pair of tangents PQ and PR to the circle are drawn. The area of triangle OPQ is :

2. A circle is touching the side BC of $\triangle ABC$ at P and touching the sides AB and AC produced at Q and R respectively. Prove that $AQ = \frac{1}{2} (AB + BC + AC)$

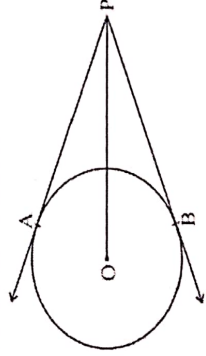


3. Prove that the lengths of tangents drawn from an external point to a circle are equal.

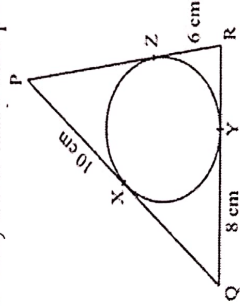
4. A line which intersects a circle in two distinct points, is called a :

- (A) chord (B) tangent (C) secant (D) diameter

5. In the given figure, O is the centre of the circle and PA and PB are tangents drawn to the circle from an external point P. If $OP = 10$ cm and $PA = 8$ cm, then find the length of a diameter of the circle.



6. In the given figure, triangle PQR circumscribes the circle. If $PX = 10$ cm, $QY = 8$ cm and $RZ = 6$ cm, then find the perimeter of triangle PQR.



7. The length of a chord of a bigger circle concentric with a circle of radius 3 cm is 8 cm. If the chord is tangent to the smaller circle, then find the radius of the bigger circle.

8. In two concentric circles, a chord of length 24 cm of the outer circle is the tangent to the inner circle of radius 5 cm. The radius of the outer circle is :

9. Hari was eating ice-cream on his way back home from school. When he observed the shape of the ice-cream from the side view, he found it to be a circle with two tangents. If PA and PB are the two tangents to the circle from an external point P and $\angle APB = 60^\circ$ then answer the following :

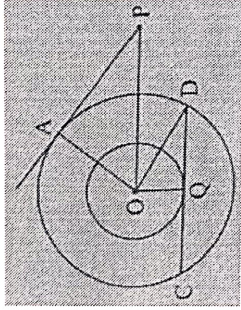
(i) What is the measure of $\angle PAO$, where O is the centre of circle ?

Answers - page 1

- (ii) If the radius of the circle is 3 cm, then find the length of tangent PA.
 (iii) (a) Find the measure of $\angle AOB$ OR (b) Join AB and find the measure of $\angle OAB$.

10. What is cyclic quadrilateral ?

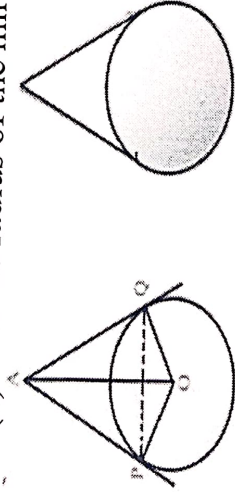
11. In two concentric circles, the radii are $OA = r$ cm and $OQ = 6$ cm, as shown in the figure. Chord CD of larger circle is a tangent to smaller circle at Q. PA is tangent to larger circle. If $PA = 16$ cm and $OP = 20$ cm, find the length CD. *(error - eraser)*



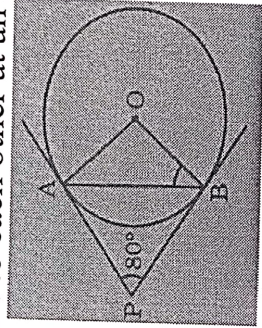
12. The picture given below shows a circular mirror hanging on the wall with a cord. The diagram represents the mirror as a circle with centre O. AP and AQ are tangents to the circle at P and Q respectively such that $AP = 30$ cm and $\angle PAQ = 60^\circ$. *(error - eraser)*

Based on the above information; answer the following questions :

- (i) Find the length PQ. (ii) Find $m\angle POQ$. (iii) (a) Find the length OA .
 OR (b) Find the radius of the mirror.



13. In the given figure, tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80° . Angle ABO is equal to *(error - eraser)*



Also find the measure of $\angle PAB$ is

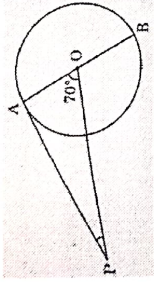
14. A line intersecting a circle in two distinct points is called a
 15. Prove that the tangents drawn at the ends of a diameter of a circle are parallel to each other. *(error - eraser)*
 16. In two concentric circles, a chord of length 24 cm of larger circle touches the smaller circle, whose radius is 5 cm. Find the radius of the larger circle.

7. 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.

18. From an external point P, a tangent PA is drawn to a circle. The number of tangents through P parallel to PA is :

19. Prove that the parallelogram circumscribing a circle is a rhombus. Also, find area of the rhombus, if radius of circle is 3 cm and length of one side of the rhombus is 10 cm.

20. In the given figure, PA is a tangent from an external point P to a circle with centre O. If $\angle AOP = 70^\circ$, then the measure of $\angle APO$ is :

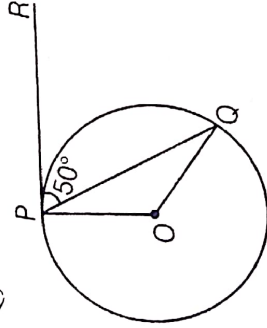


21. A tangent to a circle is a line that touches the circle at :

22. XY and PQ are two tangents drawn at the end points of the diameter AB of a circle. Prove that $XY \parallel PQ$.

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

24. If O is the centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then find the measure of $\angle POQ$.



25. If the angle between the two radii of a circle is 130° , then the angle between the tangents at the ends of these radii, is :

26. AP and AQ are tangents drawn from an external point A to a circle with centre O and inclined to each other at an angle of 90° . If the length of each tangent is 2 cm, then the radius of the circle is :

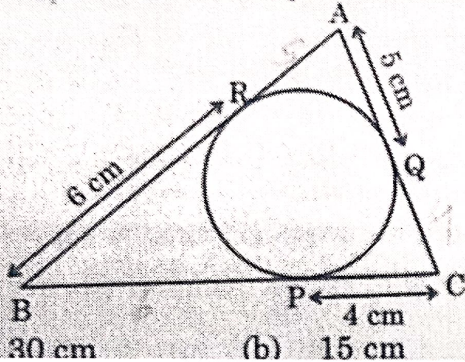
27. The length of a tangent drawn to a circle from a point A, at a distance of 10 cm from the centre of the circle, is 6 cm. Find the radius of the circle.

28. In the given figure, PA and PB are tangents to a circle centred at O. If $\angle APB = 30^\circ$, then $\angle AOB$ equals :

29. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$.

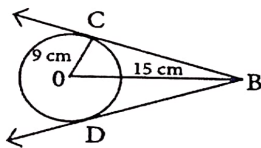
30. The distance between two parallel tangent of a circle of diameter 7cm

In the given figure, the perimeter of $\triangle ABC$ is :



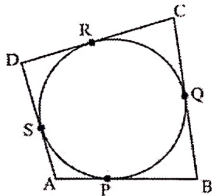
31. (a) 30 cm (b) 15 cm (c) 45 cm (d) 60 cm

32. In the given figure, BC and BD are tangents to the circle with centre O and radius 9 cm. If $OB = 15$ cm, then the length $(BC + BD)$ is:



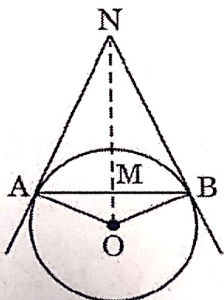
33. From a point P, two tangents PQ and PR are drawn to a circle with centre at O. T is a point on the major arc QR of the circle. If $\angle QPR = 50^\circ$, then $\angle QTR$ equals :

34. A quadrilateral ABCD is drawn to circumscribe a circle, as shown in the figure. Prove that $AB + CD = AD + BC$.



35. Prove that the parallelogram circumscribing a circle is a rhombus.

36. Circles play an important part in our life. When a circular object is hung on the wall with a cord at nail N, the cords NA and NB work like tangents. Observe the figure, given that $\angle ANO = 30^\circ$ and $OA = 5$ cm.



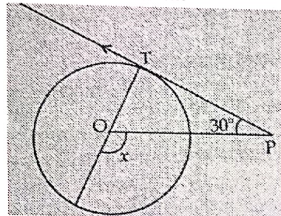
Based on the above, answer the following questions :

- (i) Find the distance AN.

- (ii) Find the measure of $\angle AOB$.
 (iii) (a) Find the total length of cords NA, NB and the chord AB. OR
 (iv) (b) If $\angle ANO$ is 45° , then name the type of quadrilateral OANB. Justify your answer.

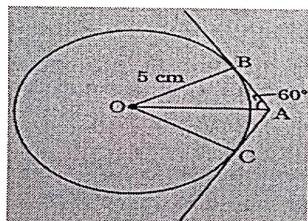
37. The length of the tangent from an external point A to a circle, of radius 3 cm, is 4 cm. The distance of A from the centre of the circle is :

38. In the adjoining figure, PT is a tangent at T to the circle with centre O. If $\angle TPO = 30^\circ$, find the value of x.



39. A circle of radius 5.2 cm has two tangents AB and CD parallel to each other. What is the distance between the two tangents ?

40. In the given figure, tangents AB and AC are drawn to a circle centred at O. If $\angle OAB = 60^\circ$ and $OB = 5$ cm, find lengths OA and AC.



41. ABC is an isosceles triangle with $AB = AC$, circumscribed about a circle. Prove that BC is bisected at E.

42. From a point P, the length of the tangent to a circle is 24 cm and the distance of P from the center is 25 cm. The radius of the circle is :

43. For the inauguration of 'Earth day' week in a school, badges were given to volunteers. Organisers purchased these badges from an NGO, who made these badges in the form of a circle inscribed in a square of side 8 cm, O is the centre of the circle and $\angle AOB = 90^\circ$. what is the area of square ABCD and length of diagonal AC.

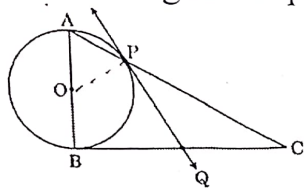
44. If a parallelogram circumscribes a circle, then the parallelogram is a :

45. A circle touches all the four sides of a quadrilateral ABCD. Prove that $AB + CD = BC + AD$.

46. PQ and PR are tangents to the circle such that $\angle QOP = 70^\circ$. Find the measure of $\angle QPR$.

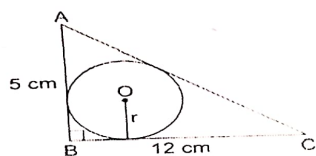
47. PQ and QR are two tangents from an external point Q to a circle with centre O and radius 8 cm. Find the length of tangent. (errors - eraser)
48. If tangents PA and PB drawn from a point P to a circle with centre O, are inclined to each other at an angle of 70° , Measure of POA.
49. The tangent l is parallel to the tangent m drawn at points A and B respectively to a circle centred at O. PQ is a tangent to the circle at R. Prove that $\angle POQ = 90^\circ$.
50. PQ is a tangent to the circle centred at O such that $\angle PQB = 120^\circ$. Find the measure of $\angle QAB$. (errors - eraser)
51. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2 \angle OPQ$.
52. Perimeter of $\triangle PQR$ is 20 cm. Find the length of tangent PA.
53. BC is tangent to the circle at point B of circle centred at O. BD is a chord of the circle so that $\angle BAD = 55^\circ$. Find measure of $\angle DBC$. (errors - eraser)
54. Prove that the perpendicular at the point of contact to the tangent of a circle passes through the centre.
55. $\triangle ABC$ circumscribes a circle of radius r such that $\angle B = 90^\circ$. If $AB = 3$ cm and $BC = 4$ cm, then find the value of r.
56. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.
57. PA and PB are tangents to the circle with centre at O. If $\angle APB = 70^\circ$, then find measure of $\angle AQB$. (errors - eraser)
58. Two concentric circles are drawn with centre O. PQ and RS are two chords of the larger circle which are tangents to the smaller circle. Prove that $PQ = RS$.
59. CD is a tangent and AB is a diameter of the circle centred at O. If $\angle DCB = 20^\circ$, then find measure of $\angle ADC$. (errors - eraser)
60. If a circle touches the side BC of a triangle ABC at P and the extended sides AB and AC at Q and R respectively, prove that:
 $AQ = \frac{1}{2}(BC + CA + AB)$
61. Prove that the tangents drawn at the end points of a chord of a circle make equal angles with the chord. (errors - eraser)
62. PA and PB are two tangents to a circle with centre O, from an external point P. If $\angle AOB = (3x - 7)$ and $\angle APB = (2x + 2)$, find x. Also find the measure of $\angle APO$.

63. 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.



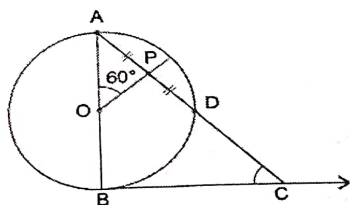
(erros - eraser)

64. A right triangle ABC in which $\angle B = 90^\circ$, AB = 5 cm and BC = 12 cm is shown. Find the radius of the circle inscribed in the triangle ABC.



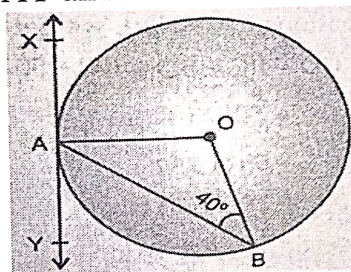
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65. In Figure, AB is diameter of a circle centered at O. BC is tangent to the circle at B. If OP bisects the chord AD and $\angle AOP = 60^\circ$, then find $m\angle C$.



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

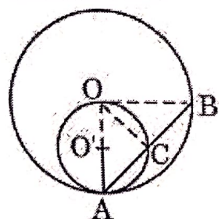
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67. PQ and PR are tangents to the circle centred at O. If $\angle OPR = 45^\circ$, then prove that ORPQ is a square.

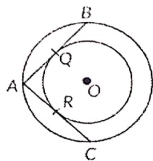
68. In Figure, two circles with centres at O and O' of radii 2r and r respectively, touch each other internally at A. A chord AB of the bigger circle meets the smaller circle at C. Show that C bisects AB.

(erros - eraser)



69. 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.

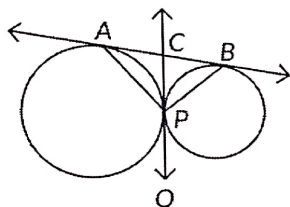
70. There are two concentric circles with centre O. If ARC and AQB are tangents to the smaller circle from the point A lying on the larger circle, find the length of AC, if AQ=5 cm.



71. In two concentric circles, a chord of length 48 cm of the larger circle is a tangent to the smaller circle, whose radius is 7 cm. Find the radius of the larger circle.

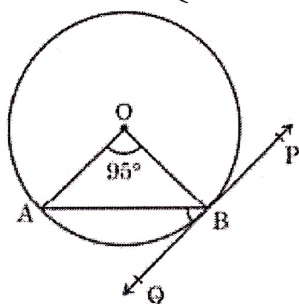
72. If two circles touch each other externally, then prove that the point of contact lies on the line joining their centres.

73. In Figure 2, two circles touch externally at P. A common tangent touches them at A and B and another common tangent is at P, which meets the common tangent AB at C. Prove that $\angle APB = 90^\circ$.

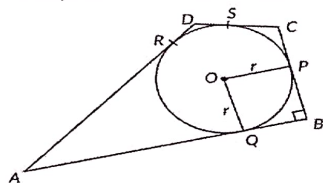


74. O is the centre of the circle. PQ and PR are tangent segments. Show that the quadrilateral PQOR is cyclic.

75. 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



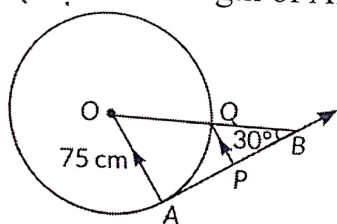
76. In the given figure, a circle is inscribed in a quadrilateral ABCD in which $\angle B = 90^\circ$. If AD=17 cm, AB=20 cm and DS=3 cm, then find the radius of the circle



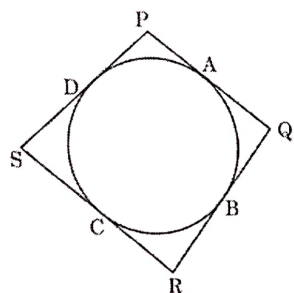
77. The discus throw is an event in which an athlete attempts to throw a discus. The athlete anti-clockwise around one and a half times through a circle, then releases the throw. When released, the discus travels along tangent to the circular spin orbit.

In the given figure, AB is one such tangent to a circle of radius 75 cm. Point O is centre of circle and $\angle ABO = 30^\circ$, PQ is parallel to OA.

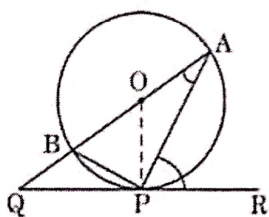
Based on above information: i) Find the length of AB. ii) Find the length of OB.
iii) Find the length of AP. (OR) Find the length of PQ. (errors - eraser)



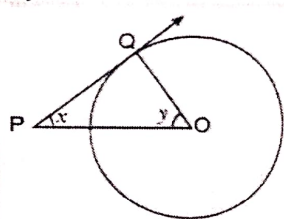
78. In the given figure, the quadrilateral PQRS circumscribes a circle. Here $PA + CS$ is equal to :



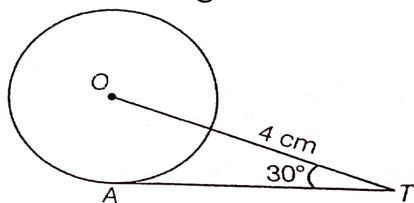
79. In the given figure, O is the centre of the circle and QPR is a tangent to it at P. Prove that $\angle QAP + \angle APR = 90^\circ$. (errors - eraser)



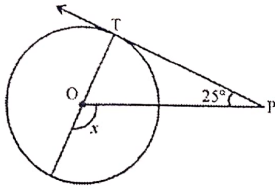
80. In the given figure, PQ is a tangent to the circle with centre O. If $\angle OPQ = x$, $\angle POQ = y$, then $x + y$ is : (errors - eraser)



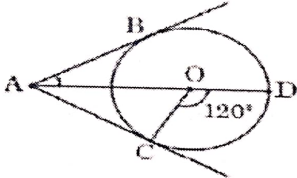
81. In the given figure, TA is a tangent to the circle with centre O such that $OT = 4$ cm, $\angle OTA = 30^\circ$, then length of TA is : (errors - eraser)



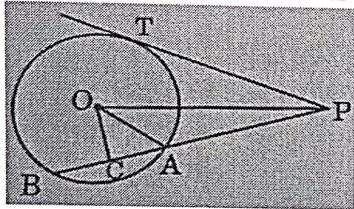
82. In the given figure, PT is a tangent at T to the circle with centre O. If $\angle TPO = 25^\circ$, then x is equal to :



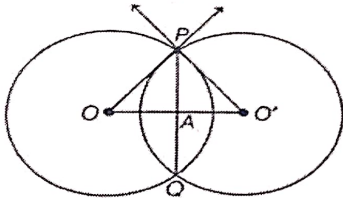
83. In the given figure, AC and AB are tangents to a circle centered at O. If $\angle COD = 120^\circ$, then $\angle BAO$ is equal to : (errors - eraser)



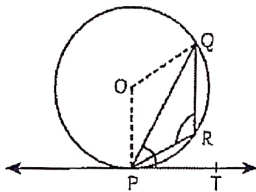
84. In the given figure, PT is a tangent to the circle centered at O. OC is perpendicular to chord AB. Prove that $PA \cdot PB = PC^2 - AC^2$. (errors - eraser)



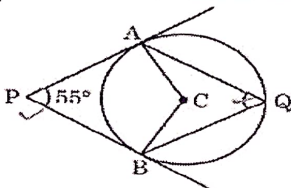
85. Two circles with centres O and O' of radii 6 cm and 8 cm, respectively intersect at two points P and Q such that OP and O'P are tangents to the two circles. Find the length of the common chord PQ. (errors - eraser)



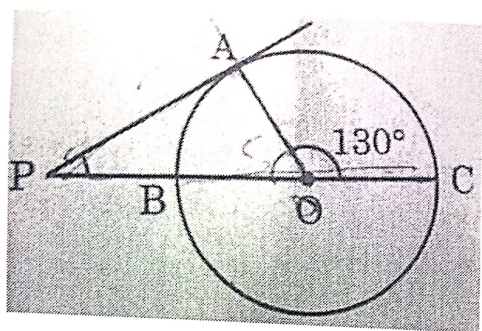
86. In the given figure, PQ is a chord of the circle centered at O. PT is a tangent to the circle at P. If $\angle QPT = 55^\circ$, then find $\angle PRQ$.



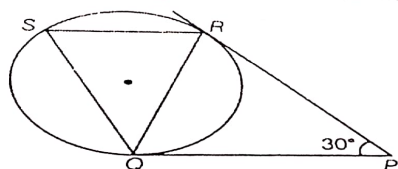
87. In the given figure, PA and PB are external point P to a circle with centre C and Q is any other point on the circle. Then the measure of $\angle AQB$ is (errors - eraser)



88. 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. (errors - eraser)



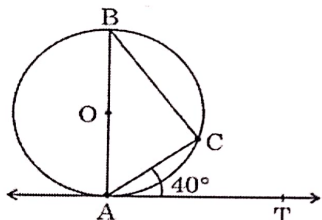
89. In the given figure, tangents PQ and PR are drawn to a circle such that $\angle RPQ = 30^\circ$. A chord RS is drawn parallel to the tangent PQ. Find $\angle RQS$. (errors - eraser)



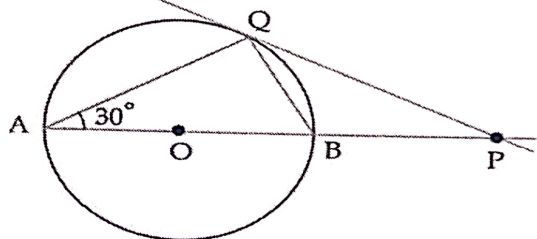
90. A circle is inscribed in a right-angled triangle ABC, right-angled at B. If $BC = 7$ cm and $AB = 24$ cm, find the radius of the circle. (errors - eraser)

91. From an external point P, two tangents PA and PB are drawn to a circle with centre O. At a point E on the circle, a tangent is drawn which intersects PA and PB at C and D respectively. If $PA = 10$ cm, find the perimeter of $\triangle PCD$.

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



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



94. In the given figure, O is the centre of the circle. If $\angle AOB = 140^\circ$, then find the value of $\angle ACB$. (errors - eraser)

