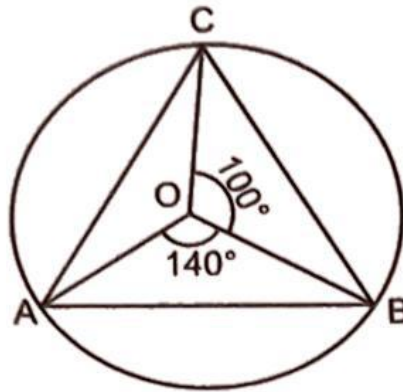
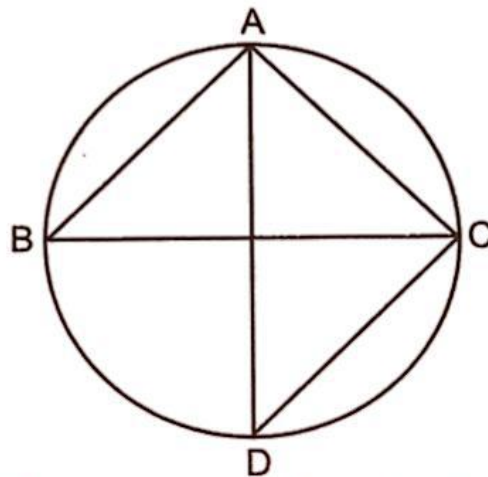


### Exercise 4.2

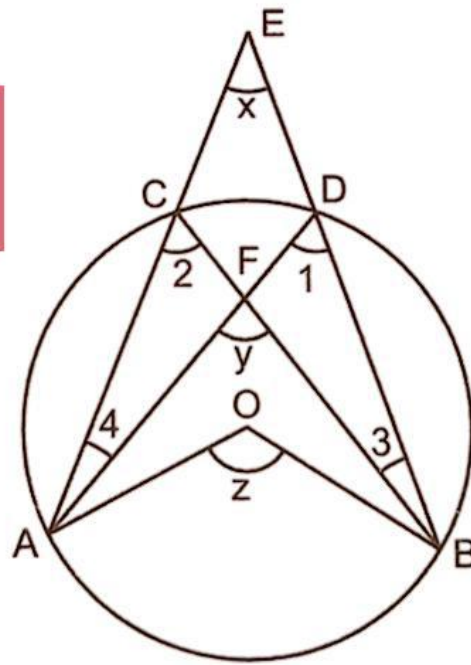
1. Triangle ABC is inscribed in a circle with centre O. If  $\angle AOB = 140^\circ$  and  $\angle BOC = 100^\circ$ , find  $\angle ABC$ .



2. In given figure, BC is a diameter of the circle and AD bisects  $\angle BAC$ . Find  $\angle BCD$ .



3. In given figure, O is the centre of the circle, prove that  $\angle z = \angle x + \angle y$   
[CBSE 2002]

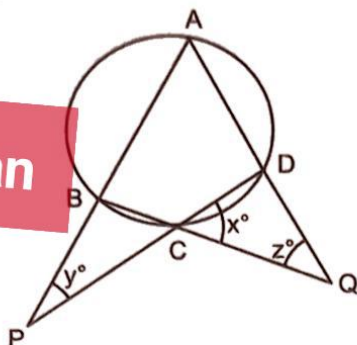


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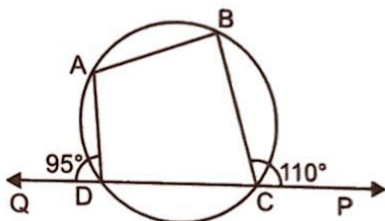
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4. In given figure, if  $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$ , then calculate the values of  $x, y$  and  $z$ .

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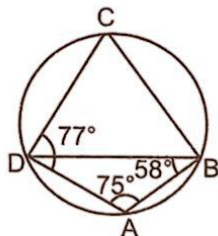
5. In given figure. ABCD is a cyclic quadrilateral. Side CD is produced on both sides such that  $\angle BCP = 110^\circ$  and  $\angle ADQ = 95^\circ$ . Find the values of  $\angle A$  and  $\angle B$ . [CBSE (Foreign) 2004]



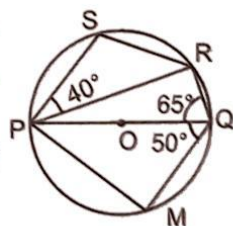
6. Prove that any four vertices of a regular pentagon are concyclic.
7. Prove that the angle subtended by an arc of a circle at its centre is double the angle subtended by it at any point on the remaining part of the circle. Using the above result prove that the angle in a major segment is acute.

[CBSE (Sample paper) 2006]

8. In given figure. ABCD is a cyclic quadrilateral in which  $\angle BAD = 75^\circ$ ,  $\angle ABD = 58^\circ$ , and  $\angle ADC = 77^\circ$ . Find (i)  $\angle BDC$  (ii)  $\angle BCD$  (iii)  $\angle BCA$



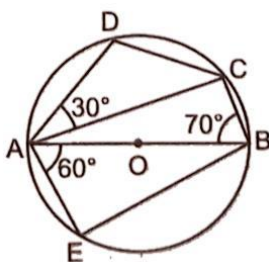
9. In given figure. PQ is a diameter of a circle with centre O. If  $\angle PQR = 65^\circ$ ,  $\angle SPR = 40^\circ$ ,  $\angle PQM = 50^\circ$ , find  $\angle QPR$ ,  $\angle PRS$  and  $\angle QPM$ .



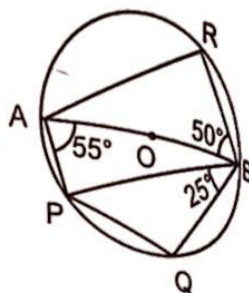
10. Prove that the mid-point of the hypotenuse of a right triangle is equidistant from its vertices.

11. In given figure. AB is a diameter of a circle, with centre O. If  $\angle ABC = 70^\circ$ ,  $\angle CAD = 30^\circ$ ,  $\angle BAE = 60^\circ$ , find,  $\angle BAC$ ,  $\angle ACD$  and  $\angle ABE$ .

[CBSE 2004]



12. In given figure, AB is a diameter of a circle, with centre O. If  $\angle PAB = 55^\circ$ ,  $\angle PBQ = 25^\circ$ , and  $\angle ABR = 50^\circ$ , find the  $\angle PBA$ ,  $\angle BPQ$  and  $\angle BAR$ . [CBSE 2004]



13. Prove that cyclic trapezium is isosceles and its diagonals are equal.

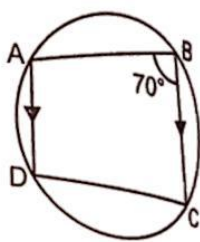
14. (a) ABCD is a cyclic quadrilateral.

(i) If  $\angle BCD = 100^\circ$  and  $\angle ABD = 70^\circ$ , find  $\angle ADB$

(ii) If  $\angle DBC = 80^\circ$  and  $\angle BAC = 40^\circ$ , find  $\angle BCD$ .

(b) AB is the diameter of the circle.  $\angle PAB = 40^\circ$ . Find  $\angle PBA$ , if P lies on the circle.

15. (i) In given fig., ABCD is a cyclic quadrilateral in which  $\angle A = (x + y + 10)^\circ$ ,  $\angle B = (y + 20)^\circ$ ,  $\angle C = (x + y - 30)^\circ$  and  $\angle D = (x + y)^\circ$ . Find x and y.



(ii) ABCD is a cyclic trapezium with  $AD \parallel BC$ , if  $\angle B = 70^\circ$ , determine the other three angles of the trapezium.

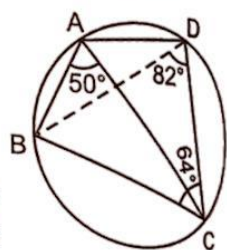
16. In given fig., ABCD is a cyclic quadrilateral calculate

(i)  $\angle BAD$

(ii)  $\angle BDC$

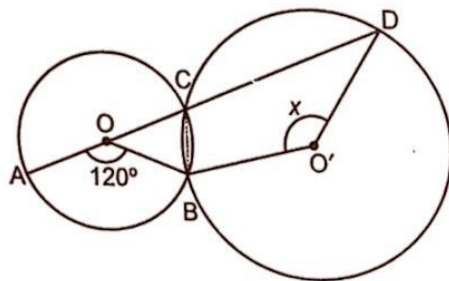
(iii)  $\angle CAD$

(iv)  $\angle ABD$ .



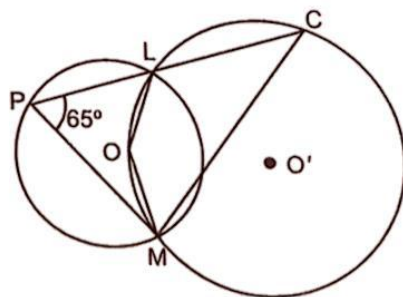
Also prove that triangle ABD is isosceles.

17. In the given fig., O and O' are the centres of two circles intersecting each other at B and C. ACD is a straight line, find x.



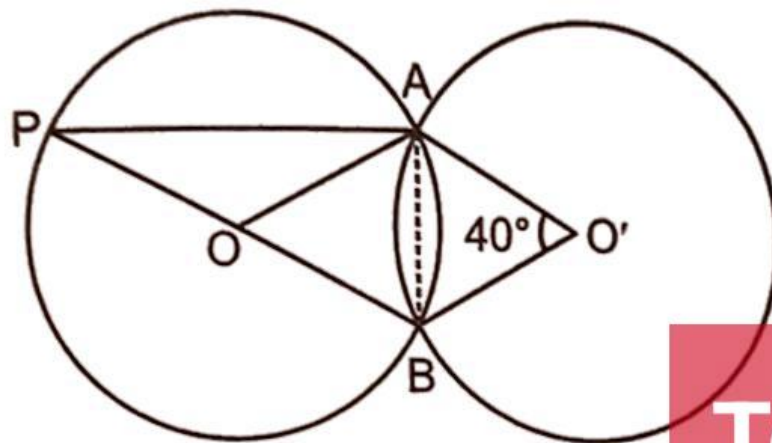
18. In the given fig., two circles intersect at L and M. The centres of the smaller circle and bigger circle are O and O' respectively, and it lies on the circumference of the bigger circle.

If  $\angle LPM = 65^\circ$ , find  $\angle LCM$ .





19. In the given fig., two congruent circles with centres O and O' intersect at A and B. If  $\angle AO'B = 40^\circ$ , then find  $\angle APB$ .



## Answers

1.  $60^\circ$     2.  $45^\circ$     4.  $36^\circ, 48^\circ, 60^\circ$     5.  $\angle B = 95^\circ, \angle A = 110^\circ$ ,  
 8. (i)  $30^\circ$     (ii)  $105^\circ$     (iii)  $45^\circ$   
 9.  $\angle QPR = 25^\circ, \angle PRS = 25^\circ, \angle QPM = 40^\circ$   
 11.  $\angle BAC = 20^\circ, \angle ACD = 40^\circ, \angle ABE = 30^\circ$   
 12.  $\angle PBA = 35^\circ, \angle BPQ = 30^\circ$  and  $\angle BAR = 40^\circ$   
 14. (a) (i)  $110^\circ$  (ii)  $60^\circ$     (b)  $50^\circ$   
 15. (i)  $x = 40^\circ$  and  $y = 60^\circ$     (ii)  $\angle A = 110^\circ, \angle C = 70^\circ$  and  $\angle D = 110^\circ$   
 16. (i)  $116^\circ$     (ii)  $50^\circ$     (iii)  $66^\circ$     (iv)  $32^\circ$     17.  $120^\circ$     18.  $50^\circ$     19.  $20^\circ$

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