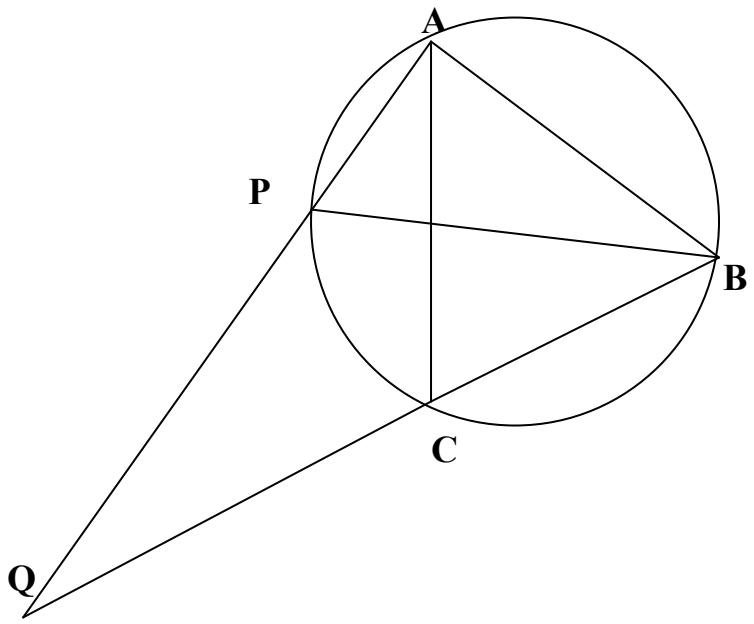
SAMPLE PAPER

TENTH CLASS

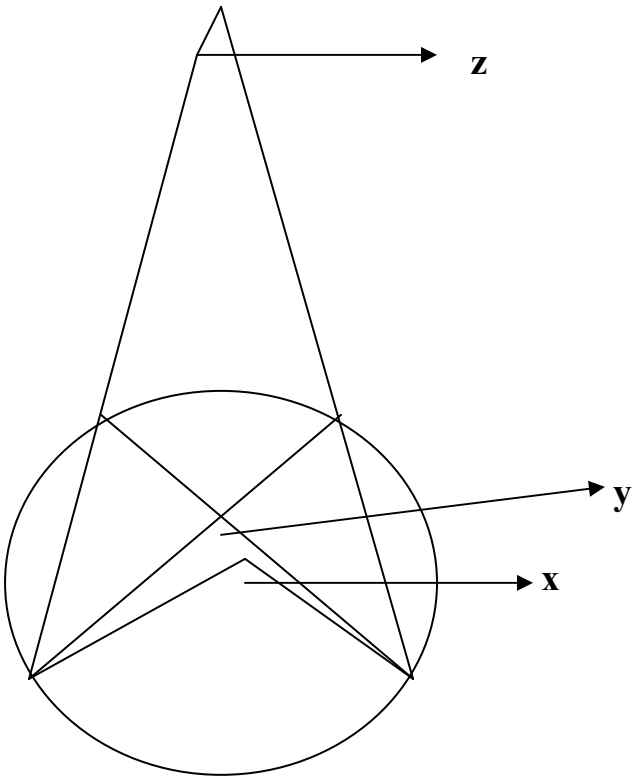
CIRCLES

SECTION A 3 MARKS EACH

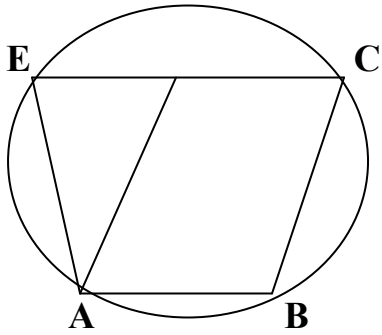
1. **If two non parallel sides of a trapezium are equal then prove that it is cyclic.**
2. **In a cyclic trapezium prove that the non parallel sides are equal.**
3. **Prove that any four vertices of the regular pentagon are cyclic.**
4. **Prove that any cyclic parallelogram is rectangle.**
5. **In a right triangle prove that the sum of the lengths of the legs is equal to the sum of the diameters of the inscribed and the circumscribed circle.**
6. **The bisector of < B of the isosceles triangle ABC where AB = AC meets the circle at P. prove that CQ = CA.**



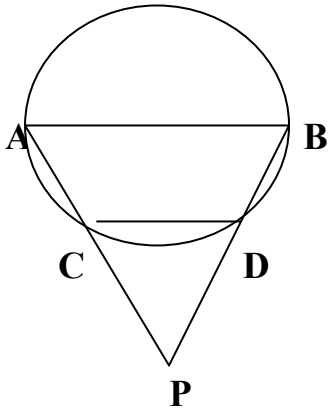
7. **in the figure below, if O is the centre rove that x + y = z**



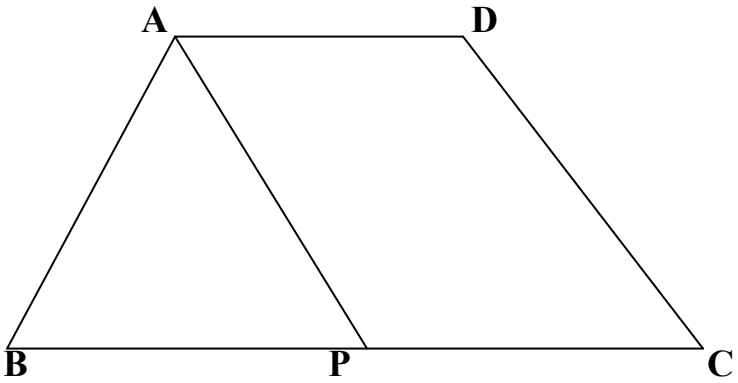
8. In the figure ABCD is a parallelogram, prove AE = AD.



9. In the figure AB is the diameter and CD is equal to the radius of the circle, prove that < P = 60.

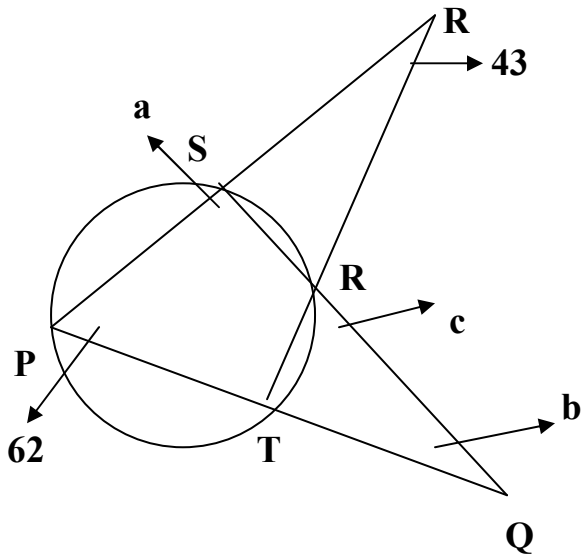


10.in the figure AB = AP, AD \\BC, AP \\ CD, prove that ABCD is cyclic.

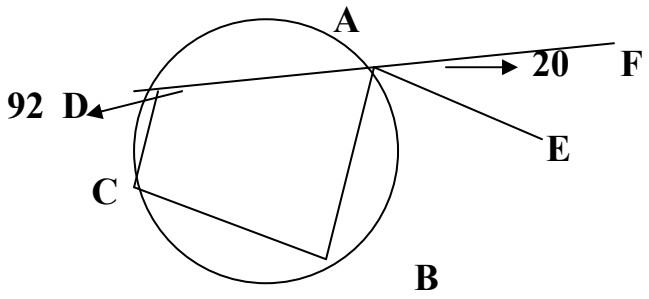


SECTION B 4 MARKS EACH

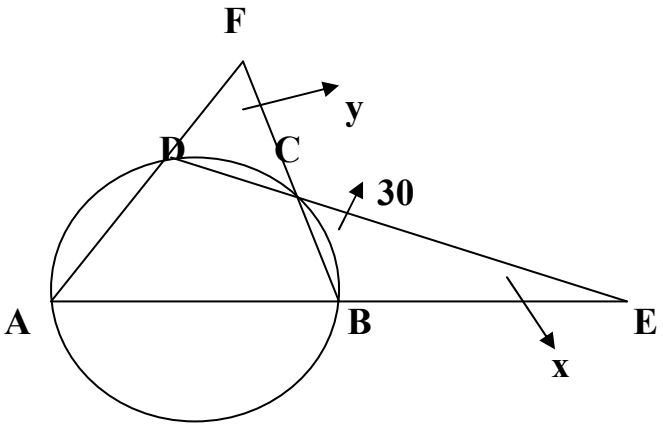
11.In the figure find a, b and c?



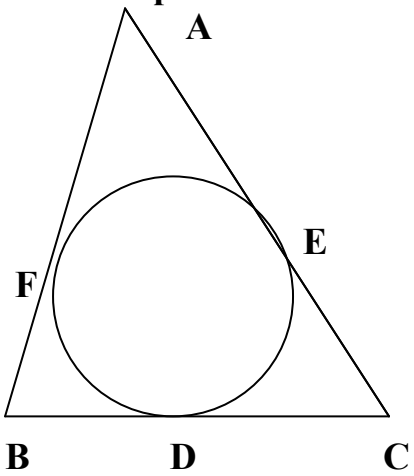
12.in the figure below, AE \\ CB find < BCD?



13.in the figure if y = 2x, find x?



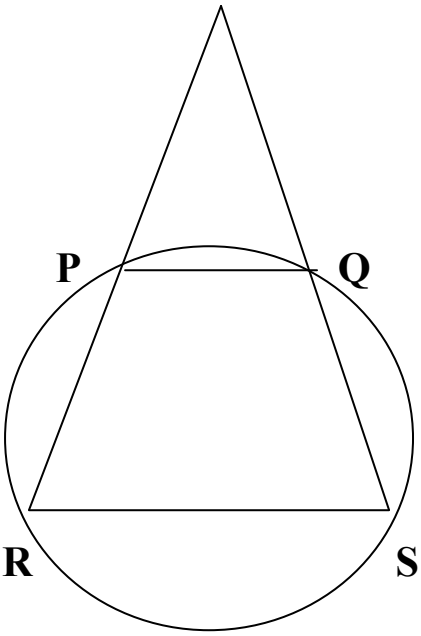
14.in the figure prove that AF + BD + CE = AE + BF + CD = ½ perimeter of ABC



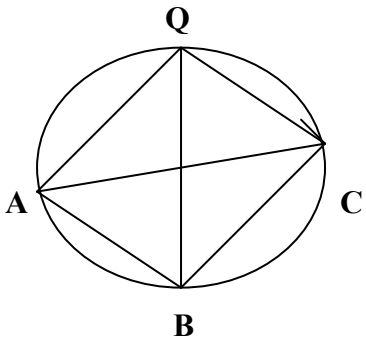
15.A circle of radius 3cm touches other circle of radius 'r' with centers A and B respectively. Find value of 'r' and length of perpendicular bisector of AB, if AB=2cm and r >3.

16.PQ and RS are the two parallel chords of a circle and the lines RP and SQ meet at O. prove OP = OQ

O

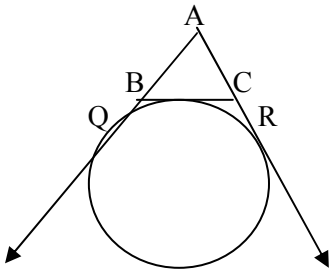


17. In the figure below < ABQ = < ACQ, Prove that < AQC = 90o + 1\2 of < BAC

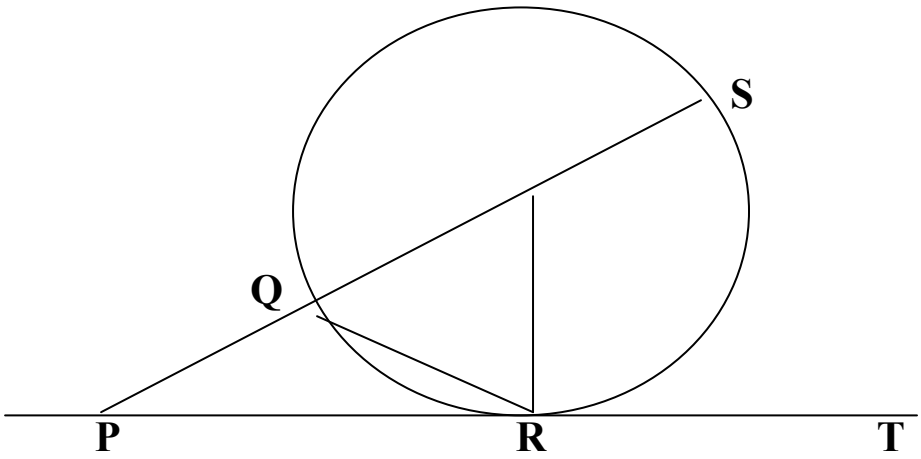


18. A circle is touching the side BC of a Δ ABC at P and is touching AB and AC when produced at Q and R respectively. Prove that

$AQ = \frac{1}{2}$ **(perimeter of Δ *ABC*)**



19. In the figure below SQ is the diameter if < SPR = x and <QRP = y, show that x + 2y = 90^o.



20. **Bisector A of $\angle$BAC of ΔABC passes through the centre O of the circum circle of ΔABC (fig-1). Prove that**

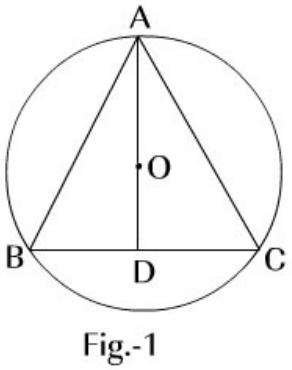


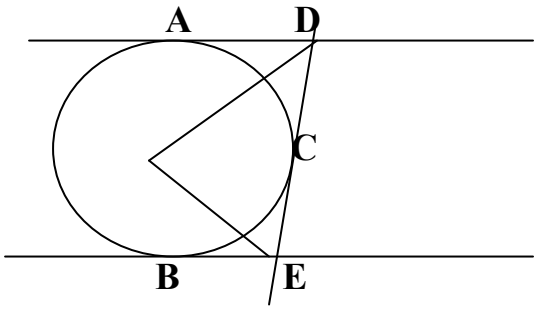
Fig.-1

AB = AC

SECTION C 6 MARKS EACH

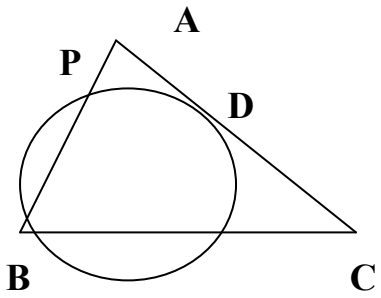
21. If all the sides of the parallelogram touch a circle then prove that parallelogram is a rhombus.

22. In the figure below, AD \\ BE. Prove that < DFE = 90.



23. Two circles intercept each other at P and Q. on QP produced there is a point A from where the tangents AB and AC are drawn to both the circles. Prove that AB = AC.

24. In the figure below AB = AC, if D is the mid point of AC, prove that 4AP = AB.



25.In the figure below, < ABC = 90, BD is perpendicular to AC, prove that.

a) AC x AD = AB^2

b) AC x CD = BC^2.