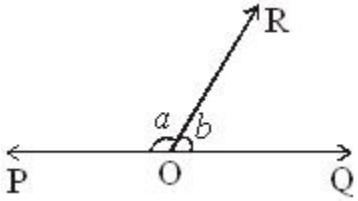
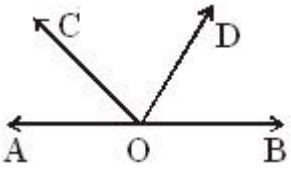
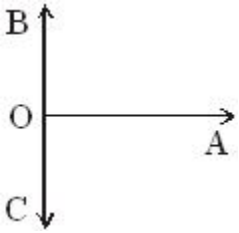
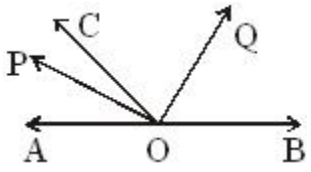
VAISHALI EDUCATION POINT
(QUALITY EDUCATION PROVIDER)

LINES & ANGLES

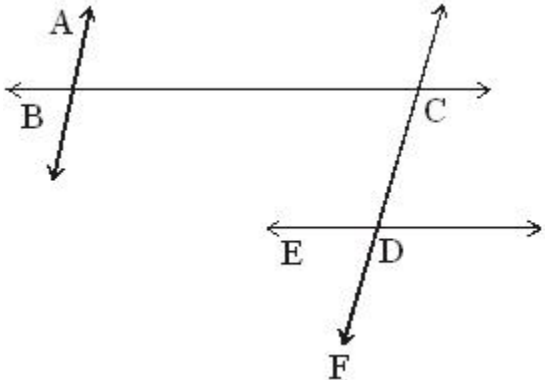
Class :- IX Subject :- Math Total Time :- 1 HOUR Total Marks :- 189

General Instructions

QNo.	Questions
1	In figure ∠POR and ∠QOR form a linear pair. If a – b = 80° Find the values of a and b.  a = 130°, b = 50°
2	In figure a is greater than b by one third of a right angle. Find the values of a and b. a = 105°, b = 75°
3	If ∠AOC + ∠BOD = 70° Find ∠COD.  ∠COD = 110°
4	If ray OC stands on a line AB such that ∠AOC = ∠BOC then show that ∠AOC = 90°
5	If AOB is a line, Ray OC stands on it. OP bisects ∠BOC and OQ bisects ∠AOC, show that ∠POQ is a right angle.
6	If ∠AOC and ∠AOB are right angles (as in fig.) show that BOC is a line 
7	In figure OP bisect $\angle AOC, OQ$ bisects $\angle BOC$ and $OP \perp OQ$. Show that points A,O and B are collinear.



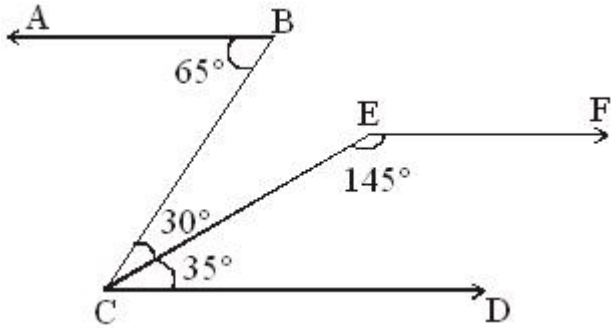
8 In figure AB||CF and BC||ED. Prove that $\angle ABC = \angle FDE$.



9 AB, CD and PQ are three lines concurrent at O. If $\angle AOP = 5y$, $\angle QOD = 2y$ and $\angle BOC = 5y$. Find the value of y.

$y = 15°$

10 In fig $\angle ABC = 65°$, $\angle BCE = 30°$, $\angle DCE = 35°$ and $\angle CEF = 145°$ Prove that AB||EF.



11 In $\triangle PQR$, $\angle Q > \angle R$ and 'm' is a point on QR such that PM is the bisector of $\angle QPR$. If the perpendicular from P on QR meets QR at N, then prove that $\angle MPN = \frac{1}{2}(\angle Q - \angle R)$.

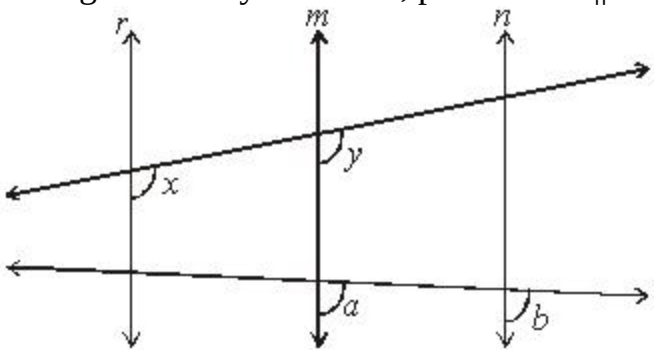
12 Prove that if the arms of an angle are respectively perpendicular to the arms of another angle, thenthe angles are either equal or supplementary.

13 Side BC of a $\triangle ABC$ is produced to a point D. The bisector of $\angle A$ meets BC at L. Prove that $\angle ABC + \angle ACD = 2\angle ALC$.

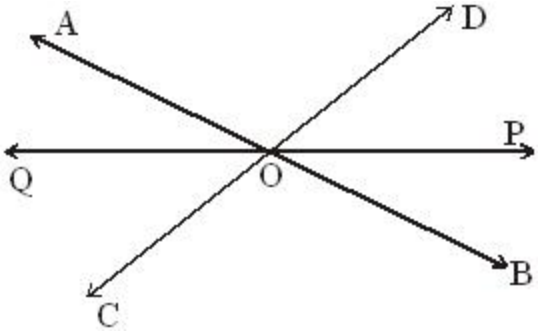
14 In $\triangle ABC$, the bisector of $\angle ABC$ and $\angle BCA$ intersect each other at the point '0'. Prove that $\angle BOC = 90° + \angle BAC$

15 Prove that if the arms of one angle are respectively parallel to arms of another angle, then the angles are either or supplementary.

16 . In figure if x = y and a = b, prove that r || n.

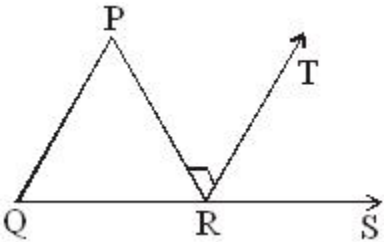


17 AB and CD are two intersecting lines OP and OQ are respectively bisectors of ∠BOD and ∠AOC. Show that OP and OQ are opposite rays.



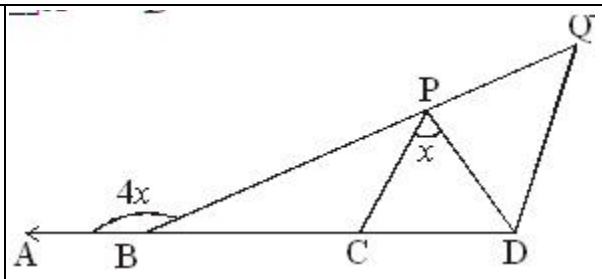
18 The side EF, FD and DE of a △DEF are produced in order forming three exterior angles DFP, EDQ and FER respectively. Prove that ∠DFP + ∠EDQ + ∠FER = 360°

19 In figure side QR of △PQR has been produced to S if $\angle P : \angle Q : \angle R = 3 : 2 : 1$ and RT ⊥ PE. PR. Find ∠TRS.



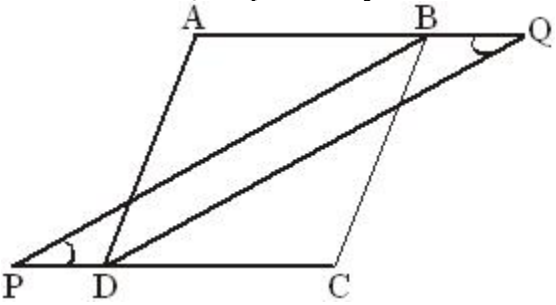
ÐTRS = 60°

20 In the given figure, ABCD and BPQ are lines. BP = BC and DQ || CP Prove that (i) CP = CD (ii) DP bisects ∠CDQ.



21 ABCDE is a regular pentagon and bisector of ∠BAE meets CD at M, If bisector of ∠BCD meets AM at P. Find ∠CPM.

22 In figure bisectors of ∠B and ∠D of a quadrilateral ABCD meets CD and AB produced at P and Q respectively. Prove that ∠P + ∠Q = (∠ ABC + ∠ ADC)



23 AP and DP are bisectors of two adjacent angles A and D of a quadrilateral ABCD. Prove that 2∠APD = ∠B + ∠C.

24 Prove that the sum of the four angles of a quadrilateral is 360°.

25 If two parallel lines are intersected by a transversal, then prove that the bisectors of any two alternate angles are equal.

26 If two lines are intersected by a transversal in such a way that the bisectors of a pair of alternate angles are equal, then prove that the two lines are parallel.

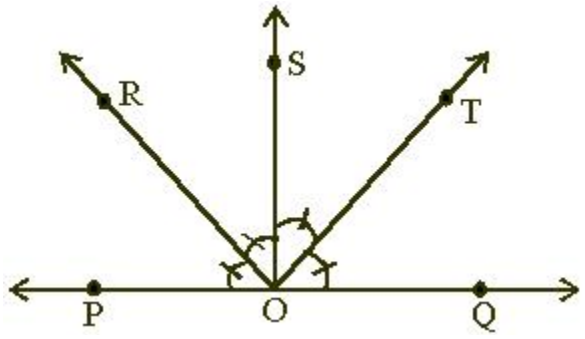
27 If two parallel lines are intersected by a transversal, then prove that the bisectors of corresponding angles are equal.

28 Side BC of a △ABC is produced in both the directions. prove that the sum of the two exterior angles so formed is greater than 180°.

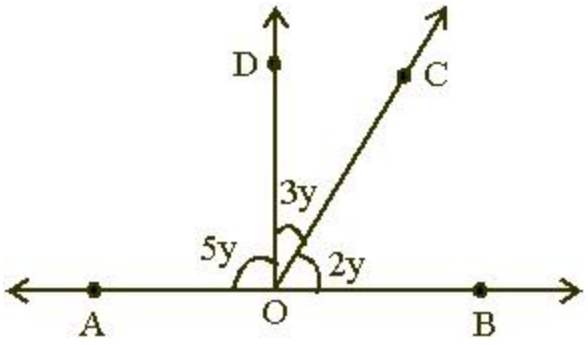
29 O is a point in the interior of two parallel lines AB and CD, O is joined to two points M and N on AB and CD respectively. prove that ∠BMO + ∠MON + ∠OND = 360°

30 If the complement of an angle is one-third of its supplement, find the angle.

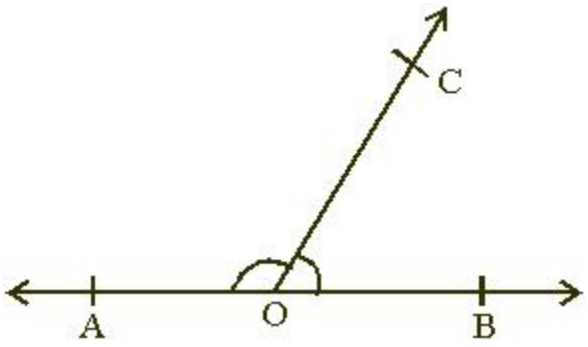
31 In the given figure, ray OS stands on a line POQ. Ray OR and ray OT are angle bisectors of $\angle POS$ and $\angle SOQ$ respectively. If $\angle POS$ = x , find $\angle ROT$.



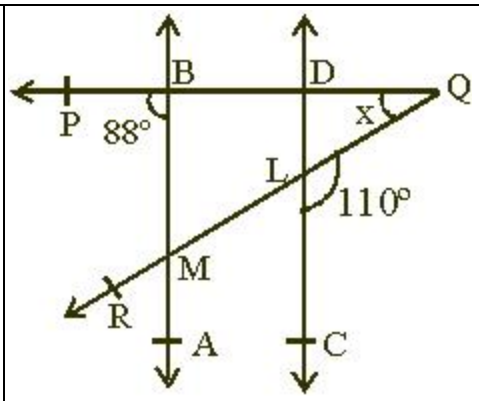
32 In the given figure, if AOB is a line then find the measure of $\angle BOC$, $\angle COD$ and $\angle DOA$.



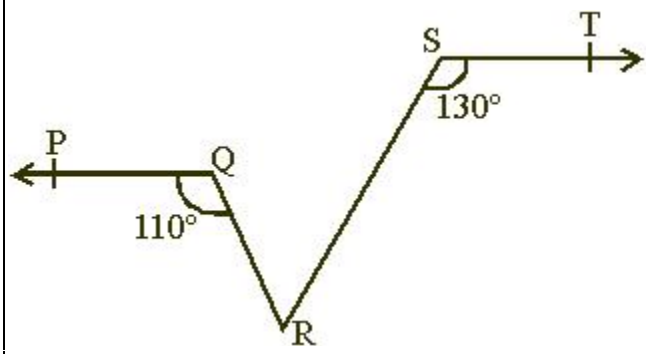
33 In the given figure, ray OC stands on the line AB and $\angle AOC : \angle BOC = 7 : 5$, then find all angles.



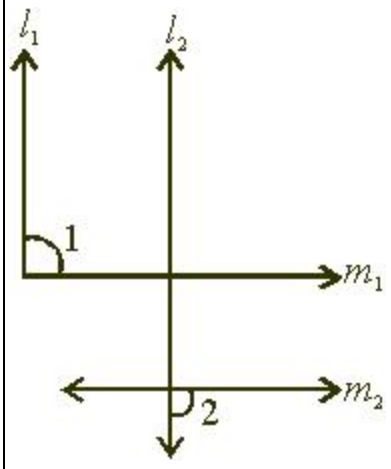
34 In figure, if AB || CD, then find the measure of x.



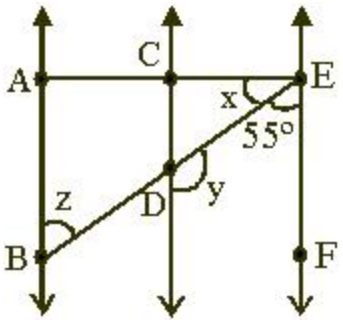
35 In the given figure, if PQ || ST, $\angle PQR = 110°$ and $\angle RST = 130°$, find $\angle QRS$.



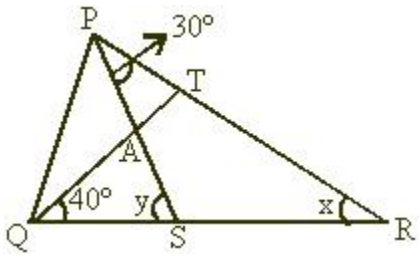
36 In the given figure, $l_1 \parallel l_2$ and $m_1 \parallel m_2$. Prove that $\angle 1 + \angle 2 = 180°$.



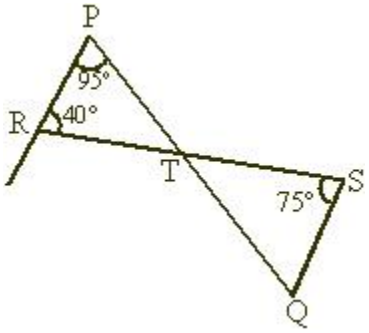
37 In the given figure, AB || CD || EF, EA ⊥ AB. If $\angle BEF = 55°$, find the values of x, y and z.



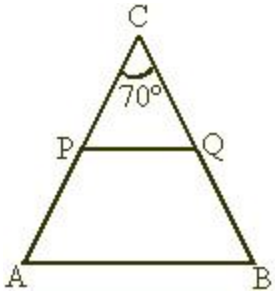
38 In figure, QT ⊥ PR, $\angle TQR = 40°$ and $\angle SPR = 30°$. Find the values of x and y.



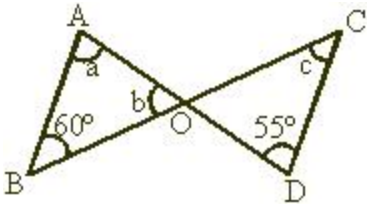
39 In the given figure, line segments PQ and RS intersect each other at a point T such that $\angle PRT = 40°$, $\angle RPT = 95°$ and $\angle TSQ = 75°$. Find $\angle SQT$.



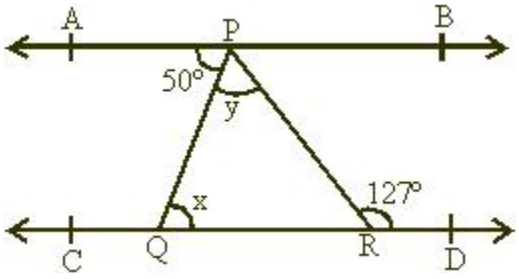
40 In figure, ABC is an isosceles triangle in which $\angle A = \angle B$ and PQ || AB, if $\angle C = 70°$ find $\angle APQ$.



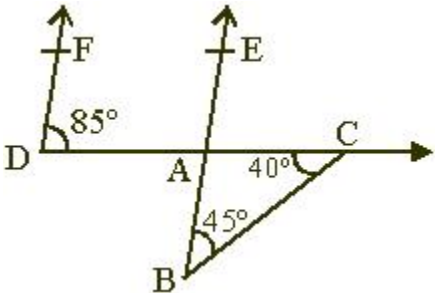
41 In the given figure, AB || CD, find the value of a, b and c.



42 In the given figure, if AB || CD, $\angle APQ = 50°$ and $\angle PRD = 127°$ find x and y.

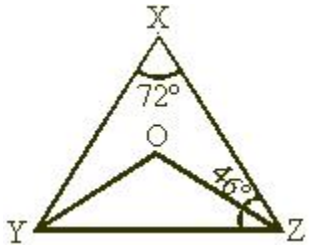


43 In the given figure, if $\angle FDA = 85°$, $\angle ABC = 45°$ and $\angle ACB = 40°$, then prove that DF || AE.

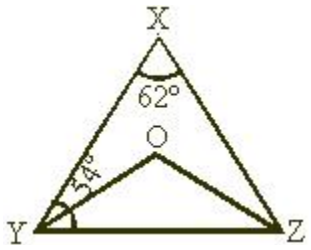


44 In ΔABC, $\angle B = 45°$, $\angle C = 55°$ and bisector of $\angle A$ meets BC at a point D. Find $\angle ADB$ and $\angle ADC$.

45 In the given figure, $\angle X = 72°$, $\angle XZY = 46°$. If YO and ZO are bisectors of and respectively of ΔXYZ, find $\angle OYZ$ and $\angle YOZ$.



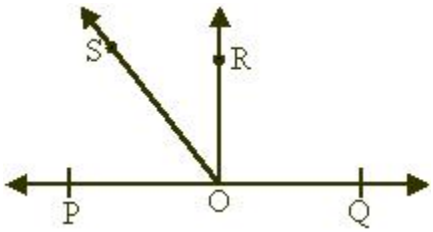
46 In the given figure, $\angle X = 62°$, $\angle XYZ = 54°$. If YO and ZO are the bisectors of $\angle XYZ$ and $\angle XZY$ respectively, find $\angle XZY$ and $\angle YOZ$.



47 Prove that the sum of three angles of a triangles is 180^0.

48 In the given figure, POQ is a line and ray OR is perpendicular to the line PQ. OS is another ray lying between ray OP and OQ. Prove that

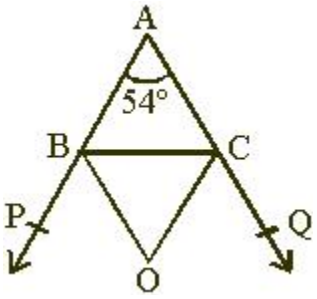
$$\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$$



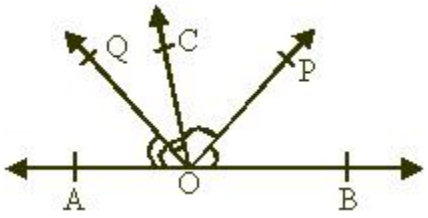
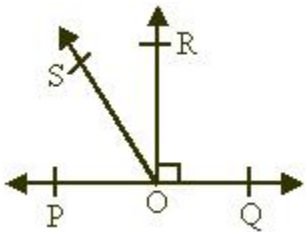
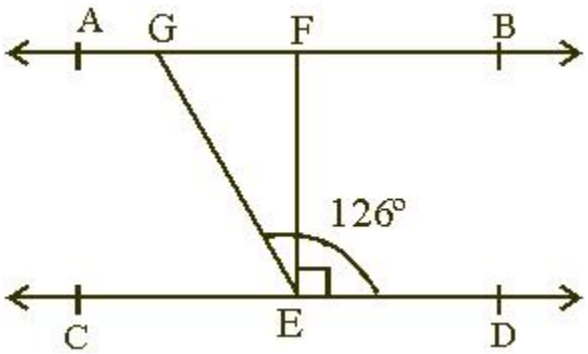
49 If two parallel lines are intersected by a transversal, then prove that the bisectors of any two alternate angles are parallel.

50 Prove that the sum of four angles of a quadrilateral is 360^0.

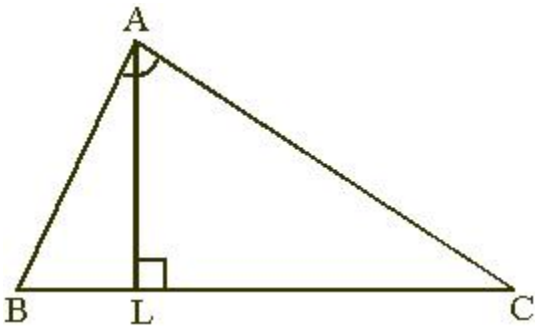
51 In figure, the sides AB and AC of ΔABC are produced to the points P and Q respectively, the bisectors BO and CO of $\angle CBP$ and $\angle BCQ$ meet at O, then, $\angle A = 54°$ if , find $\angle BOC$.



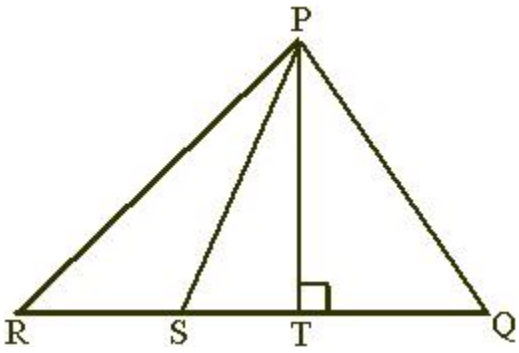
52 Prove that : If two lines intersect each other, then the vertically opposite angles are equal.

53	Prove that the sum of all the angles round a point is equal to 360^0.
54	In figure, OP bisects $\angle BOC$ and OQ bisects $\angle AOC$. Prove that $\angle POQ = 90°$. 
55	If two parallel lines are intersected by a transversal, then prove that the bisects of any two corresponding angles are parallel.
56	In the given figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$. 
57	Prove that sum of interior angles of a pentagon is 540^0.
58	If two parallel lines are intersected by a transversal, prove that the bisectors of two pairs of interior angles form a rectangle.
59	In given figure, if AB || CD, EF ⊥ CD and $\angle GED = 126°$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$. 

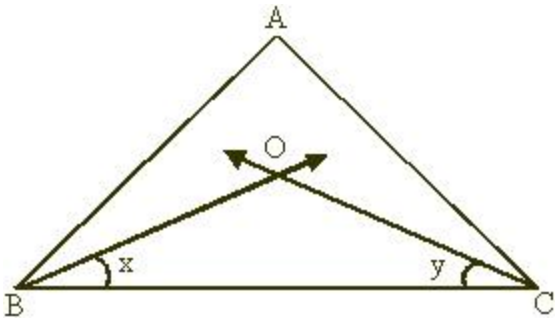
60 In ΔABC, right angled at A, (figure), AL is drawn perpendicular to BC. Prove that . $\angle BAL = \angle ACB$.



61 In figure, PS is bisector of $\angle QPR$; PT⊥ RQ and Q > R. Show that $\angle TPS = \frac{1}{2}(\angle Q - \angle R)$.



62 If in DABC, the bisectors $\angle B$ of and $\angle C$ intersect each other at O. Prove that $\angle BOC = 90° + \frac{1}{2}\angle A$.



63 In ΔABC, the sides AB and AC are produced to D and E respectively. The bisectors of $\angle DBC$ and $\angle ECB$ intersect at a point O. Prove that $\angle BOC = 90° - \frac{1}{2}\angle A$.

64	The side BC of ΔABC is produced on both sides. Prove that the sum of other two exterior angles so formed is greater than $\angle A$ by 180^0.
65	The bisectors of the base angles of a triangle enclose an angle of 135^0, prove that the triangle is a right triangle.
66	The degree measure of three angles of a triangle are x, y and z. If $z = \frac{x+y}{2}$ then find the value of z .