MATHS

BOOKS - MODERN PUBLICATION

TRIANGLES

Example

1. In ΔABC, $\angle A = 120^\circ$ and AB=AC. Find $\angle B$ and $\angle C$

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2. The measure of each angle of an equilateral triangle is :

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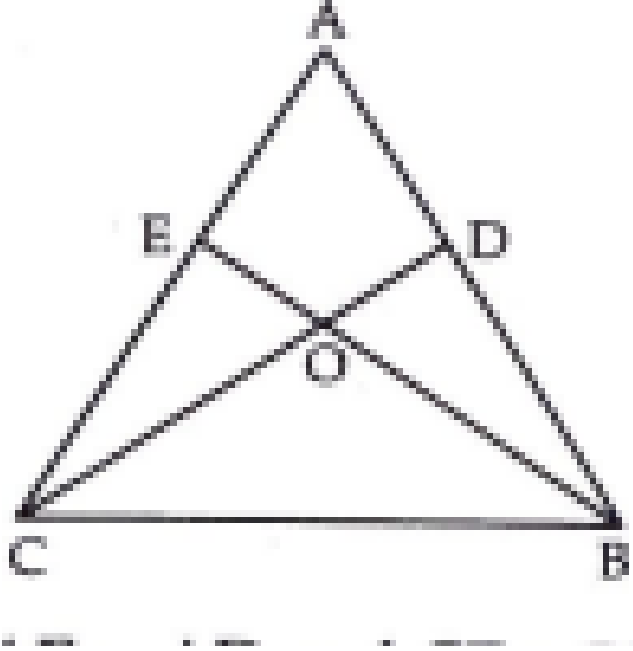
3. In the fig AE=AD and BD=CE. Prove that $\triangle AEB \equiv \triangle ADC$



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4. If the bisector of an angle of a triangle also bisects the opposite side, prove that triangle is isosceles.

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5. an equilateral triangle?

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6. In a rt. triangle if acute angle is double of other angle then hypotenuse is :

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7. If M is the mid point of hypotenuse AC of rt. ΔABC then $BM = \frac{1}{2}$.... .

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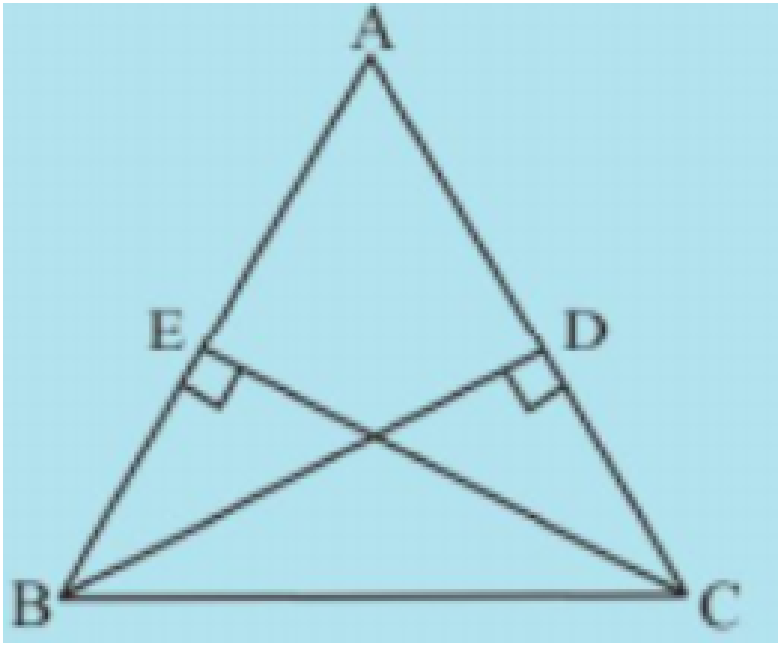
8. In Fig, BD and CE are altitudes of $\triangle ABC$ such that BD = CE.

Is $\angle DCB = \angle EBC$? Why or why not?



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9. Using vector method, prove that the altitudes of a triangle are concurrent.

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10. If altitudes from two vertices of a triangle to the opposite sides are equal prove that the triangle is isosceles.

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11. If AB is a line segment AX and BY are two equal and line segments drawn on opposite sides of the line AB such that AX||BY. If the AB and XY intersect and each other at O, prove

that

$$\triangle AOX \equiv \triangle BOY.$$

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12. If AB is a line segment AX and BY are two equal and line segments drawn on opposite sides of the line AB such that AX||BY. If the AB and XY intersect and each other at O, prove that

AB and XY bisect each other.

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13. If two right triangles, one side and an acute angle of one triangle are equal to one side and the corresponding angle of other triangle. Prove that the two triangles are congruent.

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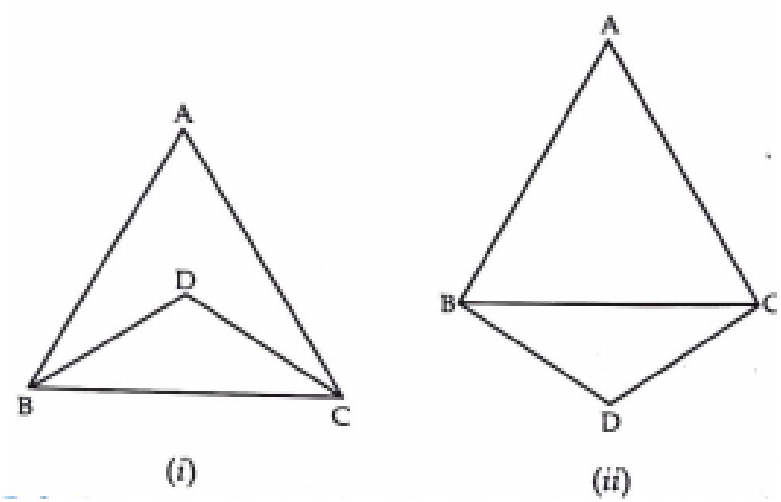
14. In the fig. AB=AC and DB=DC. Prove that $\angle ABD = \angle ACD$



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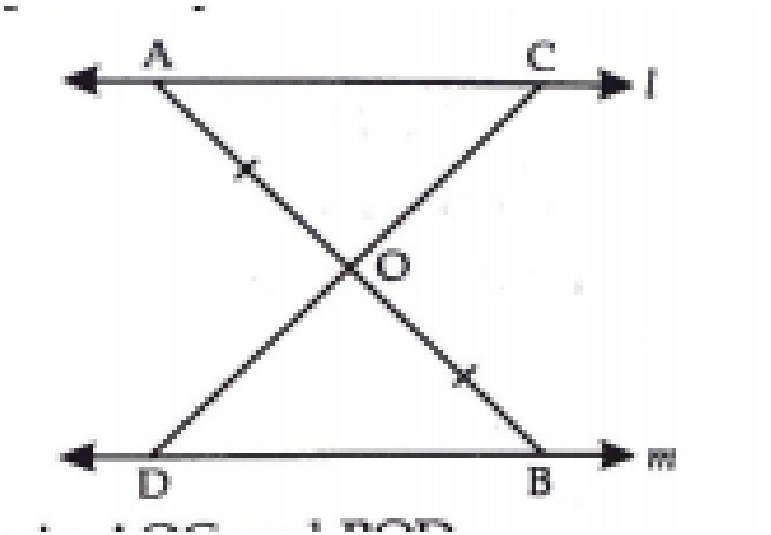
15. In the fig. l||m and O is the mid point of the line segment. Prove that O is also the mid point of any line segment CD having its end

points on l and m respectively



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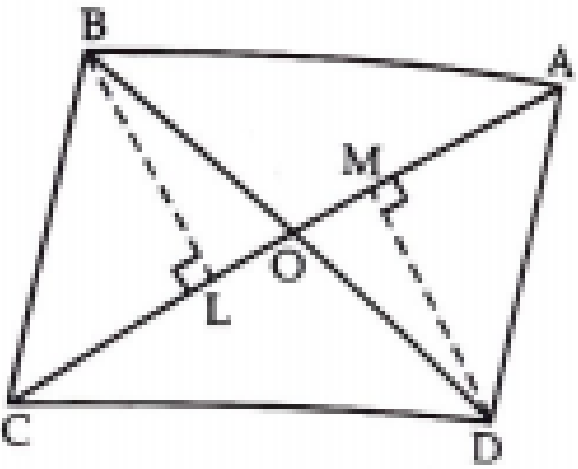
16. In the fig. BL and DM are bisector perpendicular to the segment AC and BL=DM

find that AC bisects BD



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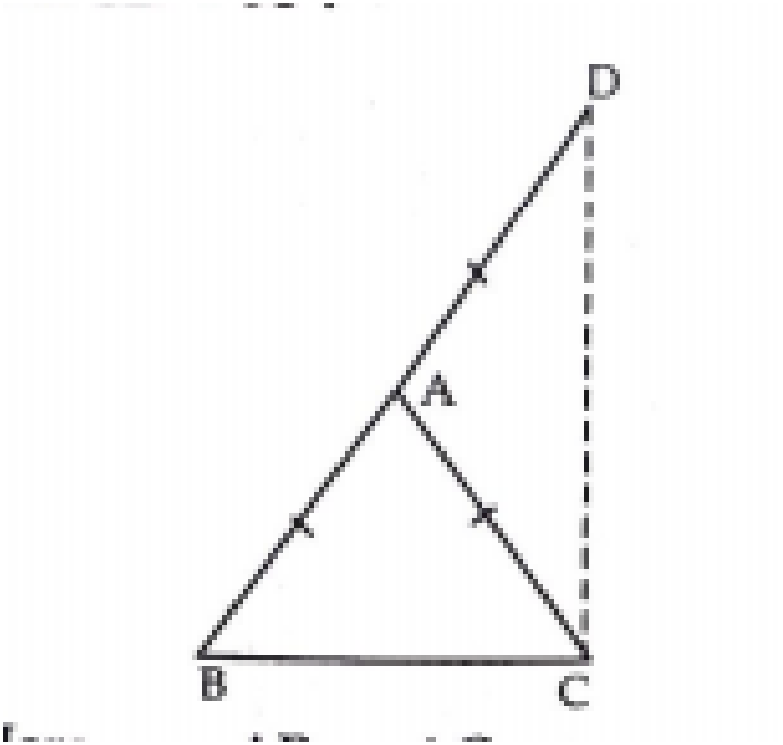
17. In the fig. ABC is a triangle in which AB=AC side BA is produced to D such that AB=AD

prove that $\angle = BCD = 90^\circ$



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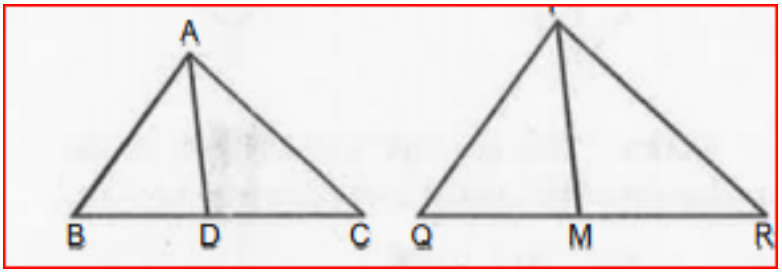
18. Sides AB and BC and median AD of a triangle ABC are respectively proportional to

sides PQ and QR and median PM of $\triangle PQR$ (see Fig.). Show that $\triangle ABC \sim \triangle PQR$.



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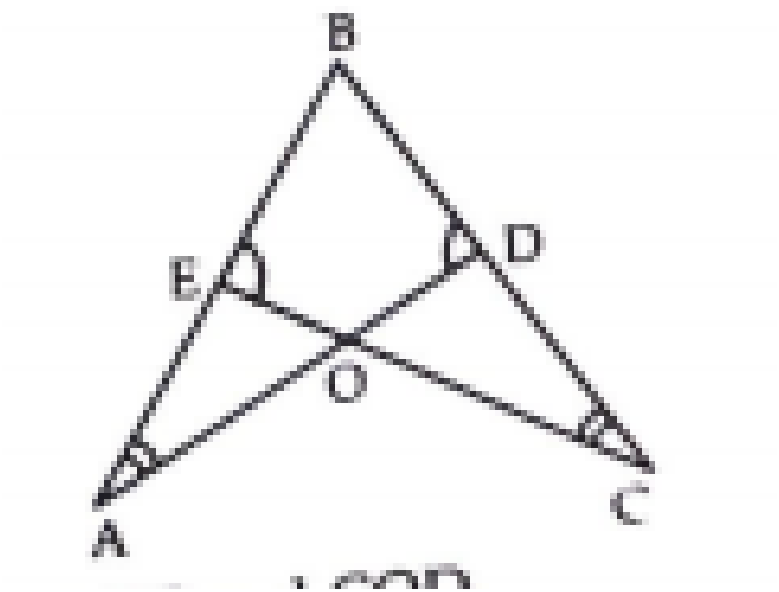
19. In the fig. $\angle A = \angle C$ and AB=BC. Prove that $\triangle ABD \equiv \triangle CBE$



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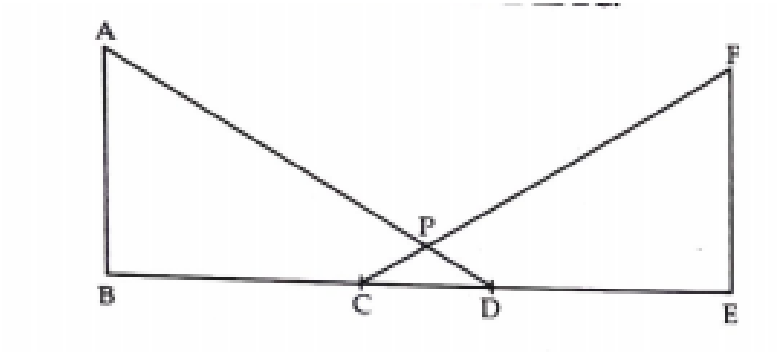
20. In the fig. AB=EF, BC=DE, $AB \perp BD$ and $EF \perp CE$. Prove that triangleABD $\equiv$

triangleFEC



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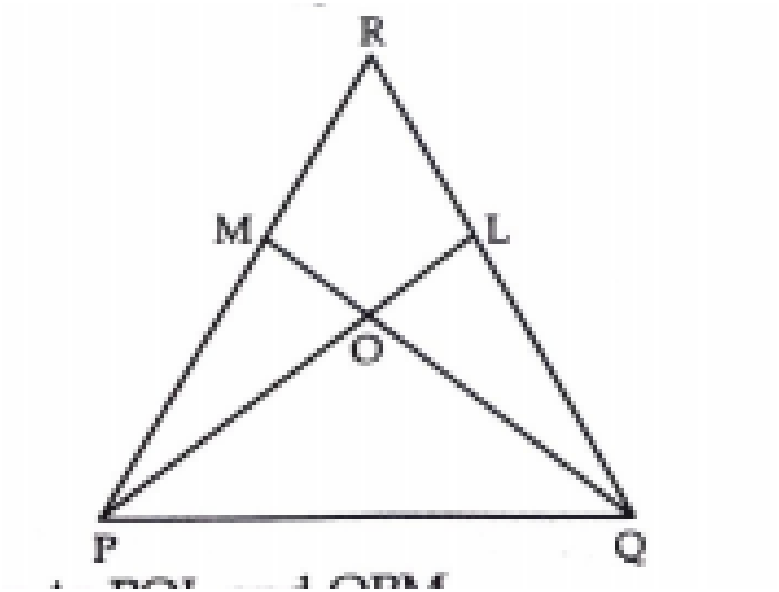
21. In the fig. $\angle QPR = \angle PQR$ and L and M are respectively on sides QR and PR of PQR such that QL=PM prove that OP=OQ, where O is

the point of intersection of PL and QM



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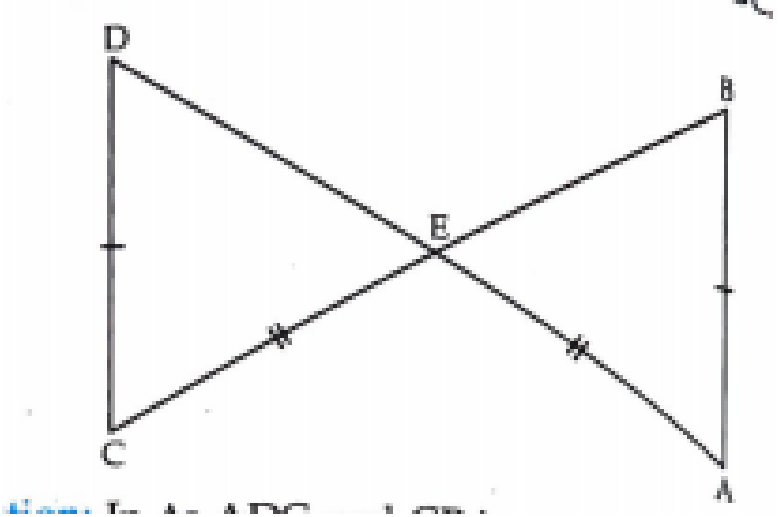
22. In the fig. AB=CD and AD=BC prove that

$\triangle ADC \equiv \triangle CBA$



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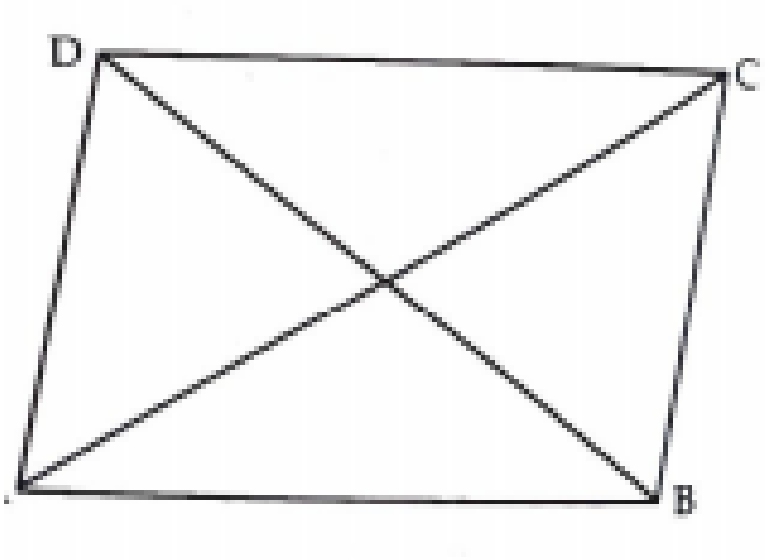
23. ABCD is a parallelogram. If two diagonal are equals, find the measure of $\angle ABC$



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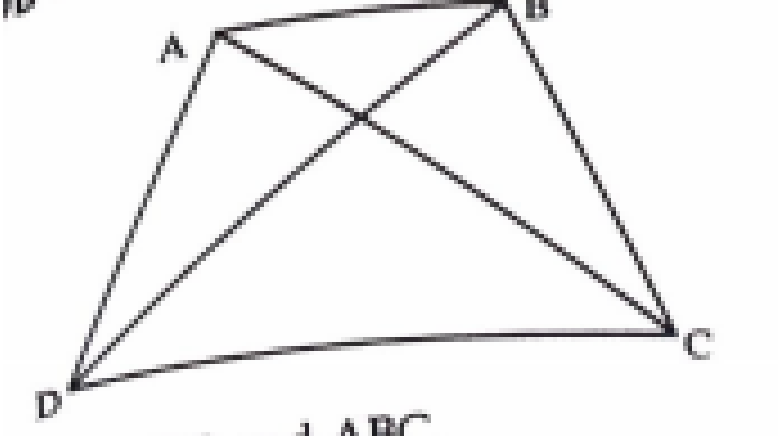
24. IN the fig. AD=BC and BD=CA. prove that

$\angle ADB = \angle BCA$ and $\angle DAB = \angle CBA$



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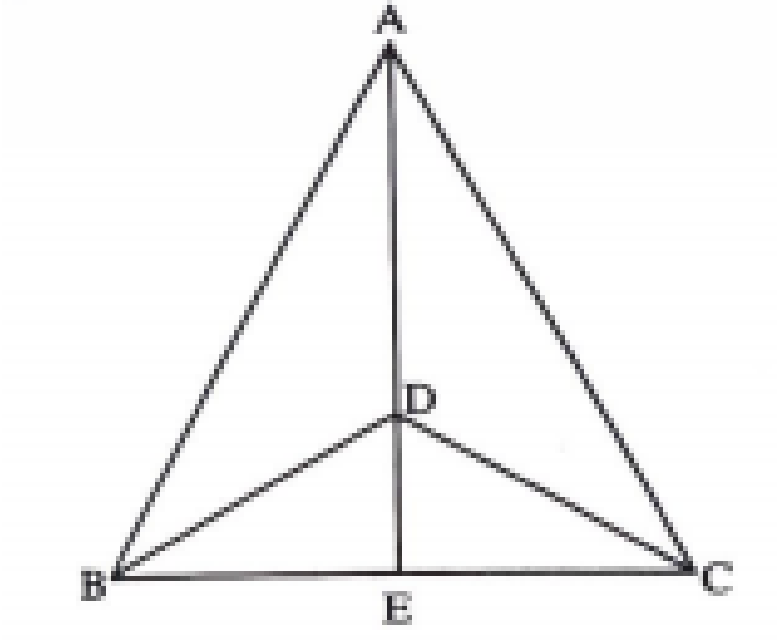
25. In the fig. AB=AC , D is the point in the interior of $\triangle ABC$ such that $\angle DBC = \angle DCB$. Prove that AD bisects

$\angle BAC$ and $\triangle ABC$



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26. Set up an equation in the following cases:

In an isosceles triangle, the vertex angle is twice either base angle. (Let the base angle be

b in degrees. Remember that the sum of angles of a triangle is 180 degrees).

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27. AD,BE and CF the altitudes of $\triangle ABC$ are equal, prove that $\triangle ABC$ is equilateral.

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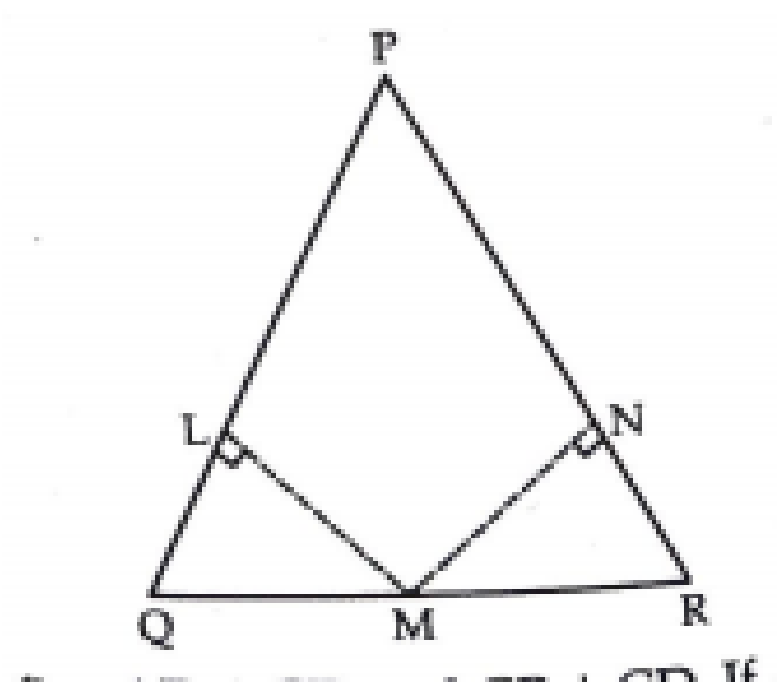
28. In the fig. LM=MN, QM=MR,ML $\perp$ PQ and $MN \perp PR$. Prove that PQ=PR



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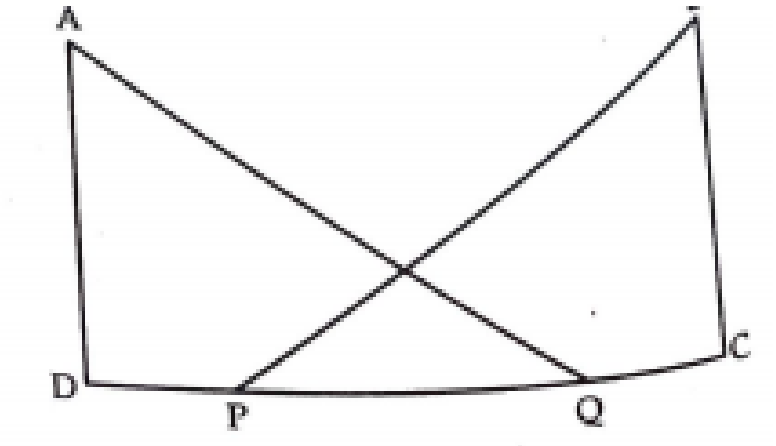
29. In the fig. $AD \perp CD$ and $CB \perp CD$. If AQ=BP and DP=CQ prove that

$\angle DAQ = \angle CBP.$



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30. ABC s a triangle and D is mid-point of BC. Perpendiculars froms D to AB and AC are equal. Prove that triangle is isosceles.

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31. If perpendiculars from any point within an angle on its forms arms are congruent prove that it lies on the bisector of that angle.

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32. ABC is a triangle in which BE and CF are perpendiculars to AC and AB respectively. If BE=CF, prove that $\triangle ABC$ is isosceles.

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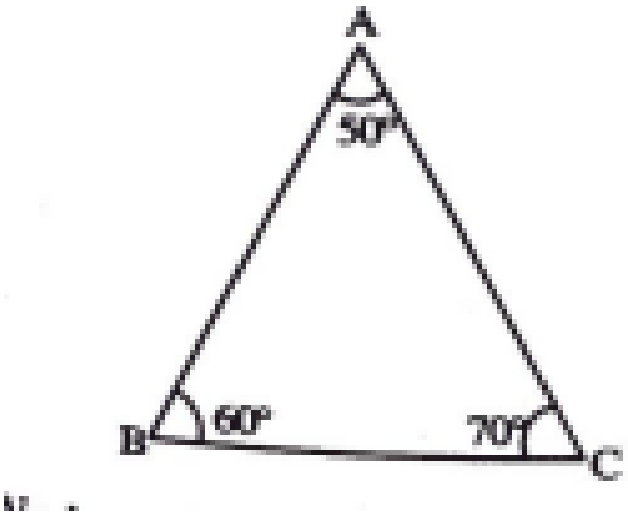
33. In a triangle ABC, if $\angle A = 50^\circ$ and $\angle B = 60^\circ$, then which side of the triangle is longest and which side is shortest?



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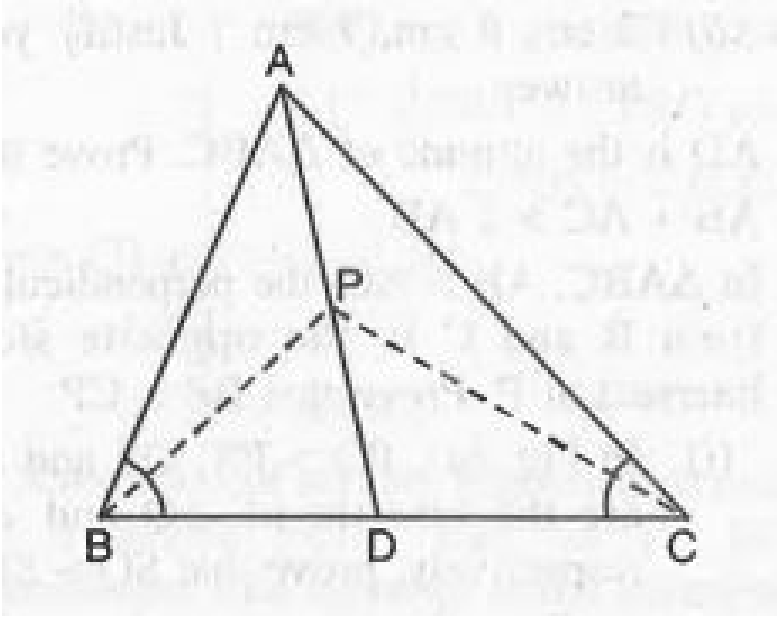
34. In fig.



BP and CP are the bisectors of $\angle B$ and $\angle C$ respectively and AC > AB. Prove each of the following : $PC > PB$.

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35. D is any point on the base BC, produced of an isosceles triangle ABC, prove that AD>AB.

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36. Prove that the sum of any two sides of a triangle is greater than twice the median drawn to the third side.

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37. The sum of three altitudes of a triangle is ..... The sum of its three sides.

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38. The perimeter of a triangle is ..... than the sum of its medians.

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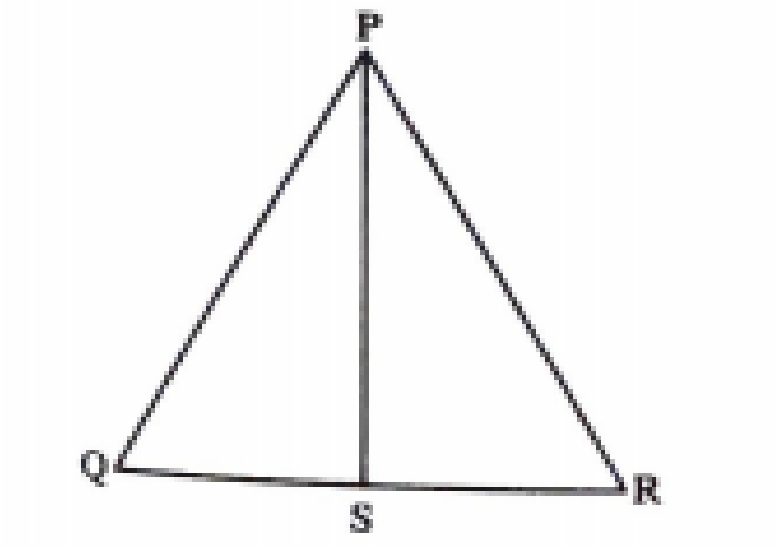
39. In $\triangle PQR$, S is the point on the side QR.

Prove that PQ+QR+RP>2PS



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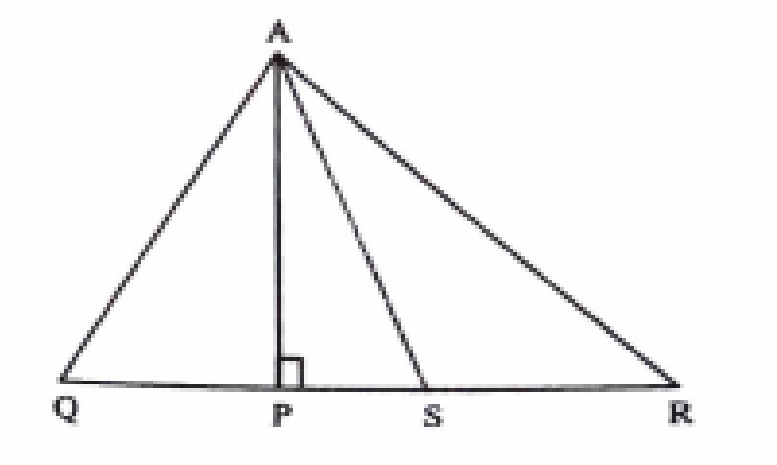
40. In the $AP \perp QR$, PR>PQ and PS=PQ. Prove

that AR>AQ



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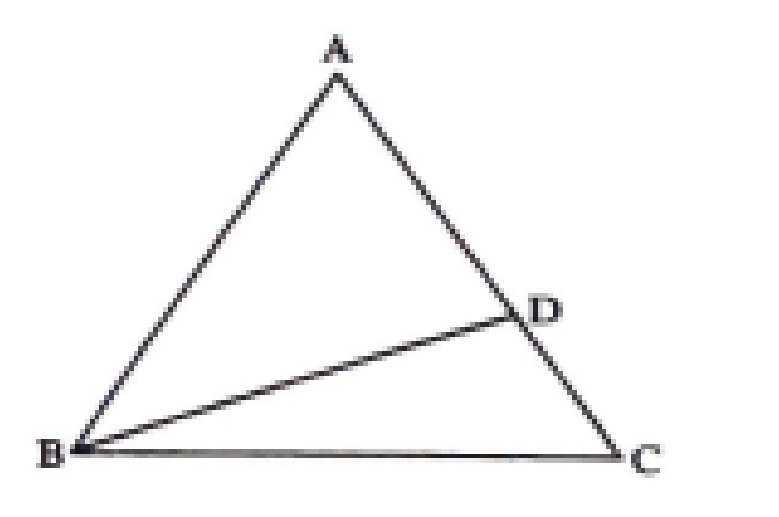
41. In the fig. AC>AB and D is the point on AC such that AB=AD. Show that BC>CD



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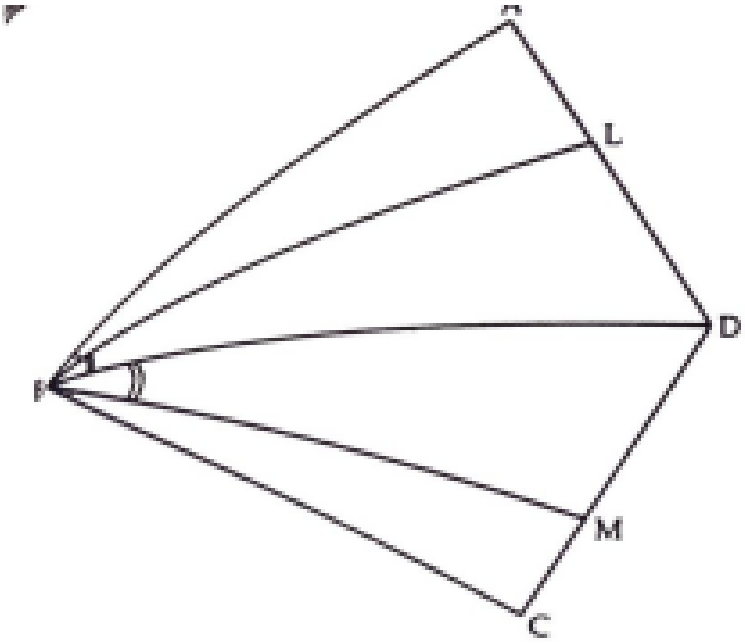
42. In fig. ABCD is a quadrilateral and L and M are respectively points on AD and CD such that AB=BC,$\angle ABL = \angle CBM$ and

$\angle LBD = \angle MBD$. Prove that BL=BM.



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43. In a rt. triangle if acute angle is double of other angle then hypotenuse is :

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44. If two isosceles triangles have a common base, prove that the line segment joining their vertices bisects the common base at right angles.

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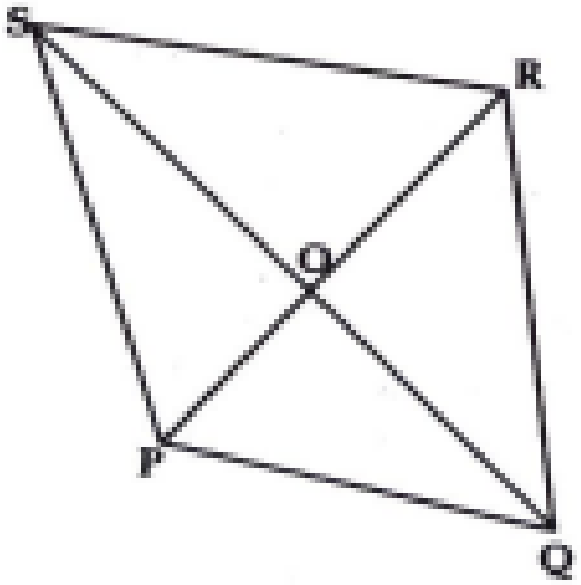
45. In fig. PQRS is a quadrilateral in which diagonals PR and QS intersect at O

Show that:



PQ+QR+RS+SP>PR+QS

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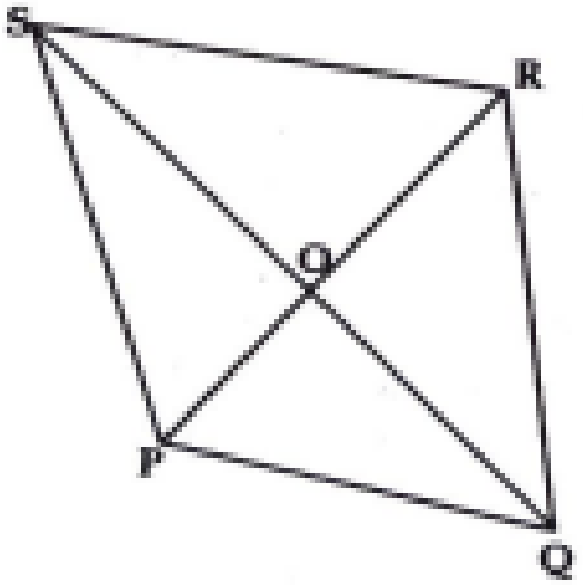
46. In fig. PQRS is a quadrilateral in which diagonals PR and QS intersect at O

Show that:



$PQ+QR+RS+SP<2(PR+QS)$

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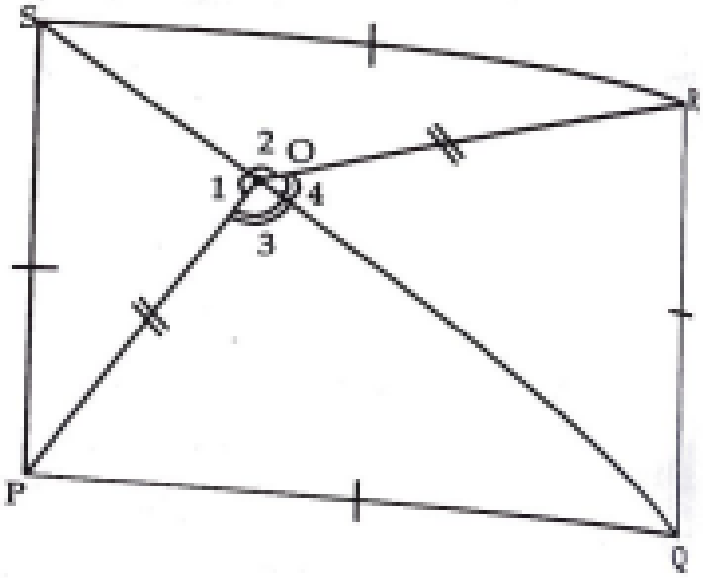
47. A point O is taken inside the third PQRS such that its distance from the angular point and R is equal. Show that QO and SO are in

ordinate the same striaght line i.e. points Q,O and R are collinear



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48. In quadrilateral ACBD, AC = AD and AB bisects $\angle A$ (see Fig. 7.16). Show that

$\triangle ABC \cong \triangle ABD$. What can you say about BC and BD?

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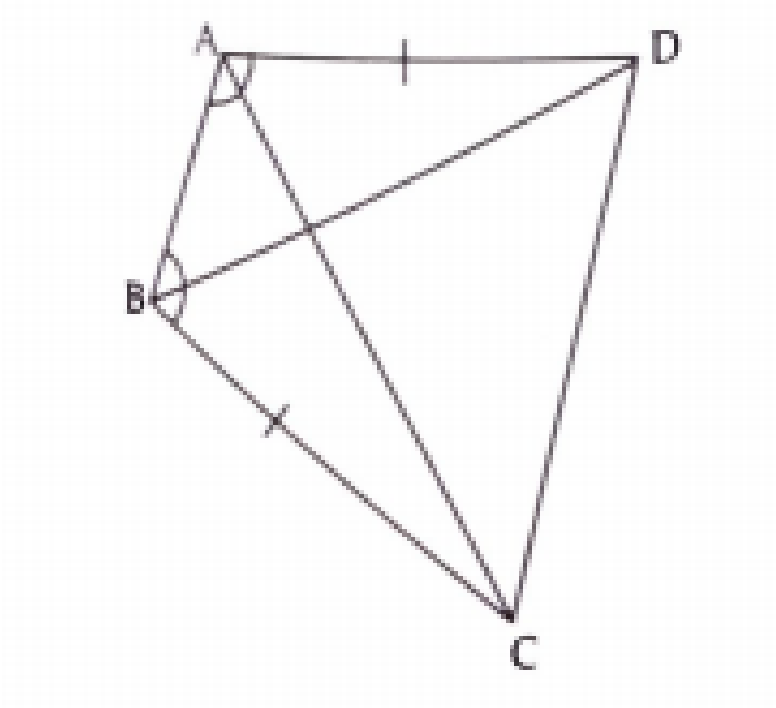
49. ABCD is a quadrilateral in which AD=BC and $\angle ADB = \angle CBA$. Prove that:



$\triangle ABD = \triangle BAC$

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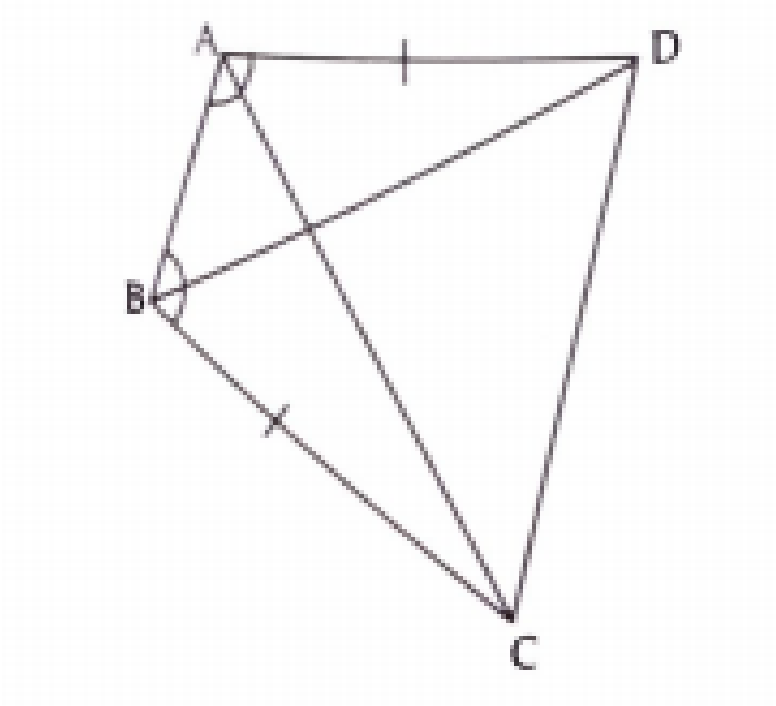
50. ABCD is a quadrilateral in which AD=BC and

$\angle ADB = \angle CBA$. Prove that:



BD=AC

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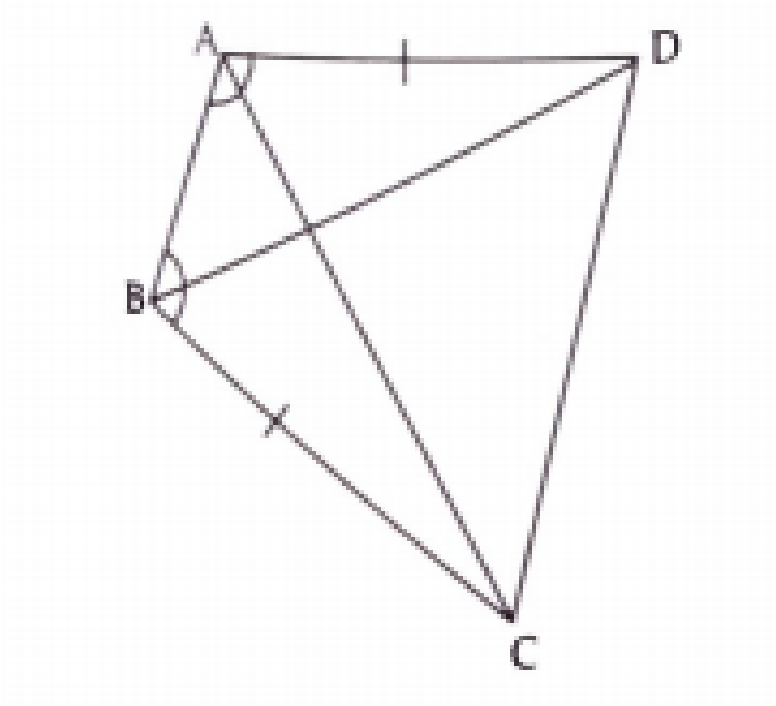
51. ABCD is a quadrilateral in which AD=BC and

$\angle ADB = \angle CBA$. Prove that:



$\angle ABD = \angle BAC$

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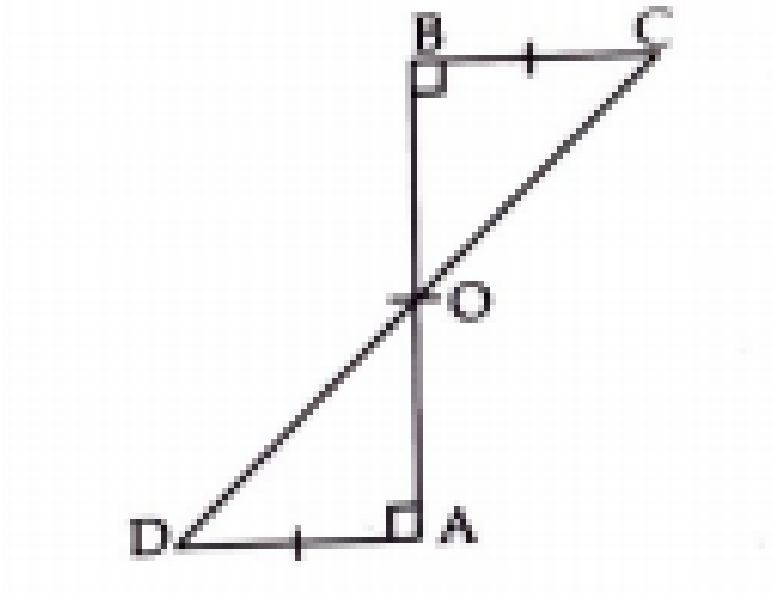
52. AD and BC are equal perpendicular to a line segment AB. Show that CD bisects AB



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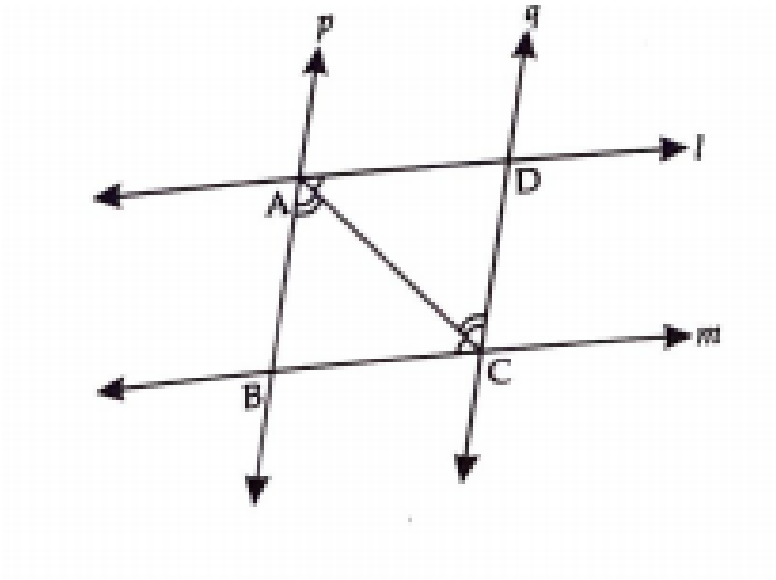
53. l and m are two parallel line intersects by another point of parallel lines p and q show

that $\triangle ABC \equiv \triangle CDA$



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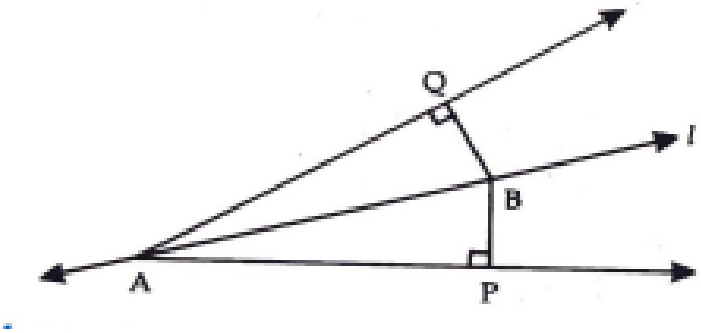
54. Line l is the bisector of an angle $\angle A$ and B is any point on l. BP and BQ are perpendiculars from B to the arms of $\angle A$ show that:

$\triangle APB \equiv \triangle AQB$



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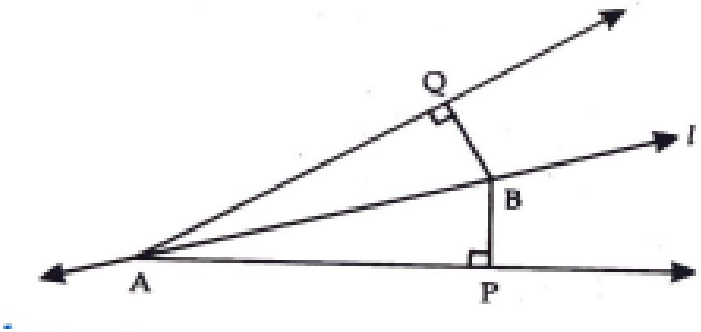
55. Line l is the bisector of an angle $\angle A$ and B is any point on l. BP and BQ are perpendiculars from B to the arms of $\angle A$ show that:

BP=BQ or B is equidistant from the arms of

$\angle A$



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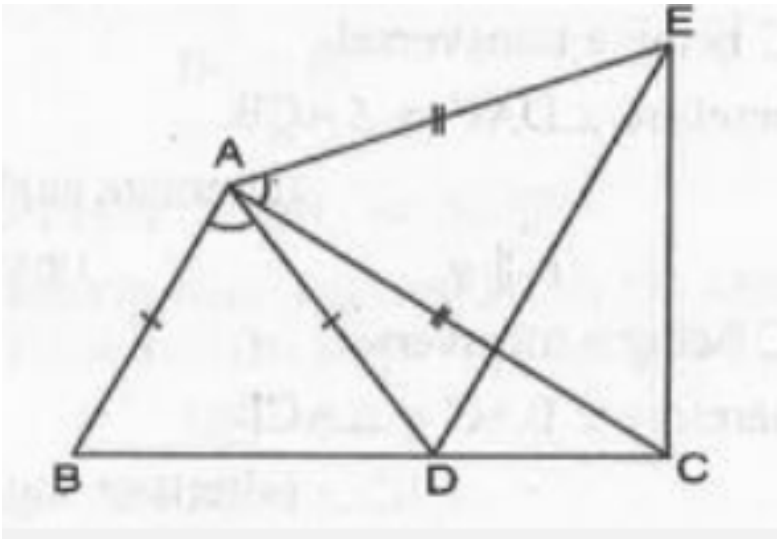
56. In Fig.



AC = AE, AB = AD and $\angle BAD = \angle EAC$. Show that BC = DE.

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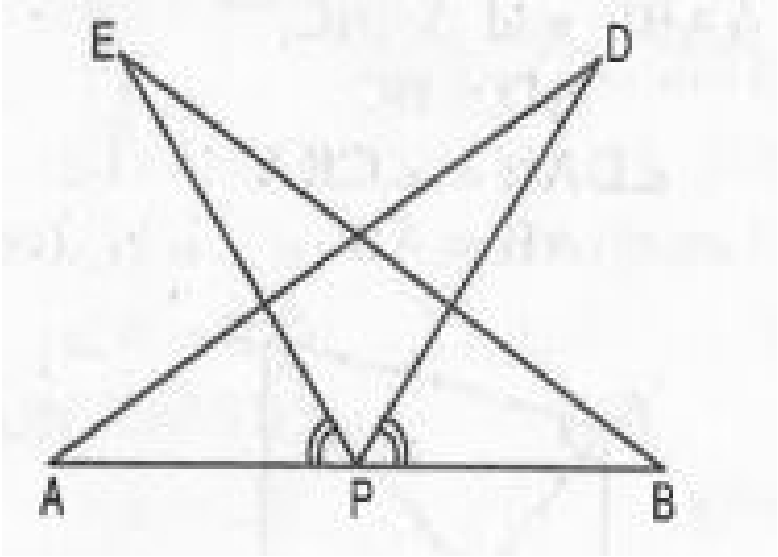
57. AB is a line segment and P is its midpoint. D and E are points on the same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$. Show that AD=BE.



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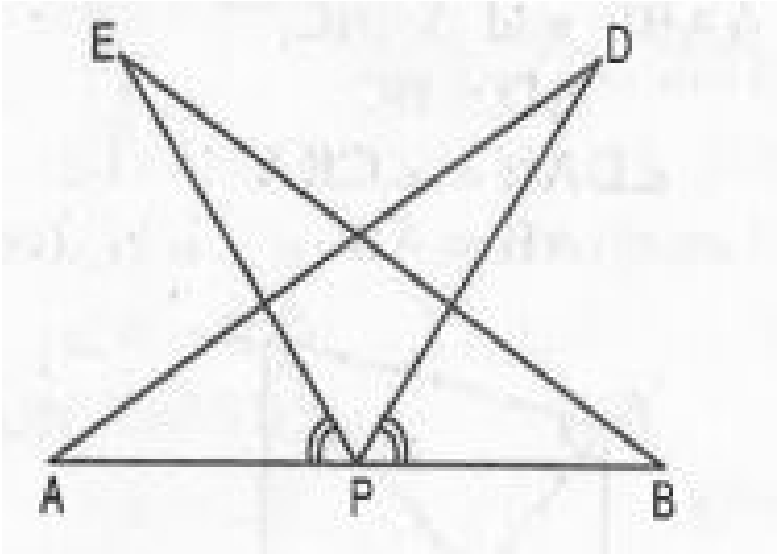
58. AB is a line segment and P is its midpoint. D and E are points on the same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$. Show that AD=BE.



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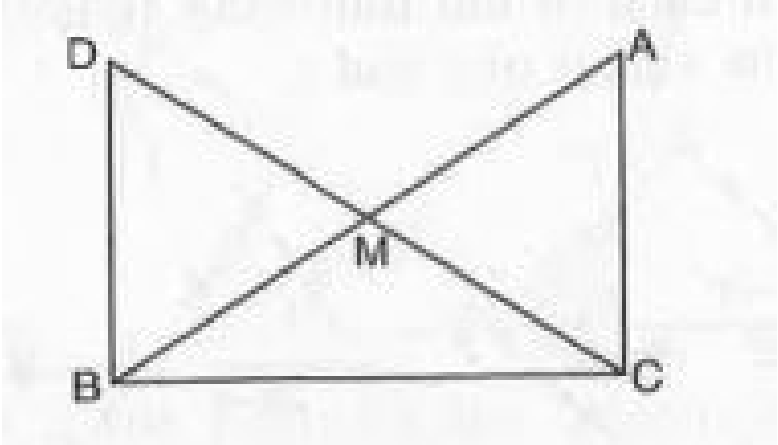
59. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (See Fig.)



Show that : $CM = \frac{1}{2}AB$.

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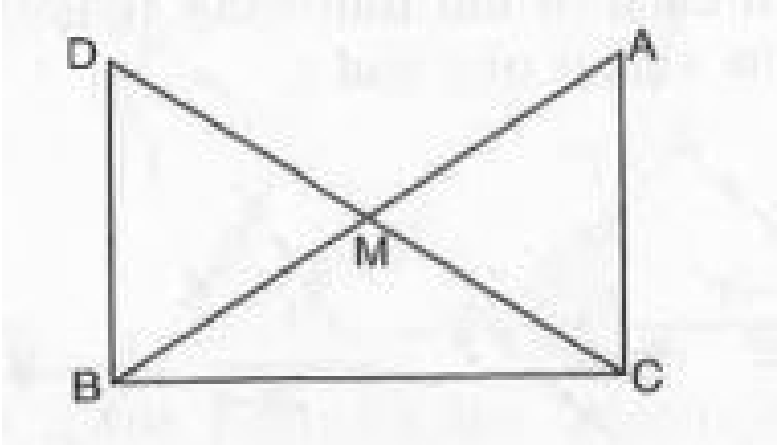
60. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (See Fig.)



Show that : $CM = \frac{1}{2}AB$.

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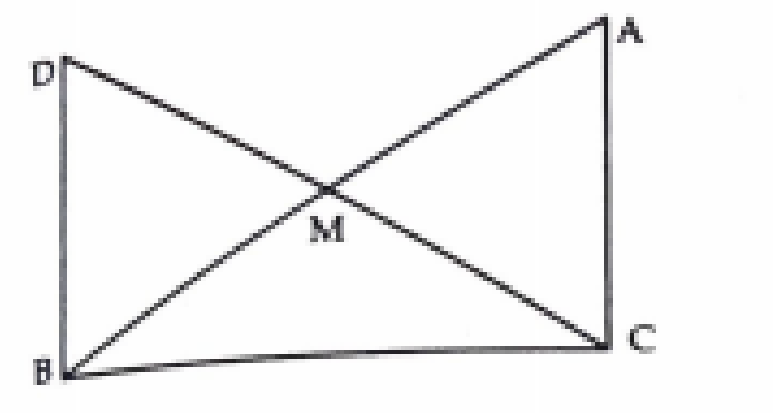
61. In right triangle ABC, right angled at C, M is the mid point of hypotenuse AB. C is joined to M and produced to a point D such that DM=CM. point D is joined to point B. show that



$\triangle DBC \equiv \triangle ACB$

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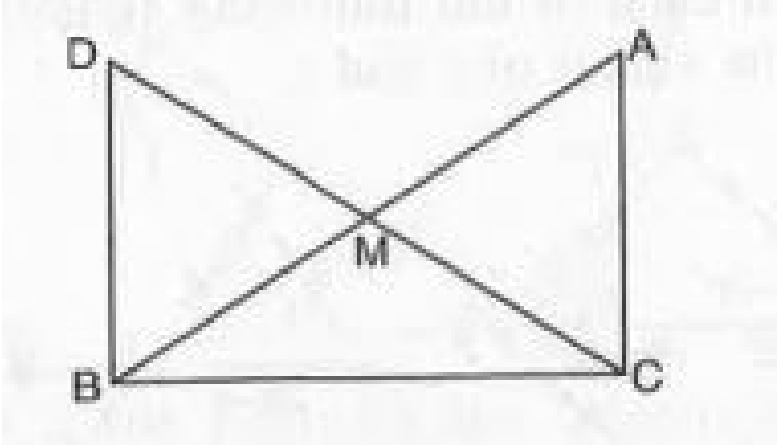
62. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (See Fig.)



Show that : $CM = \frac{1}{2}AB$.

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63. In an isosclees triangle ABC, with AB = AC, the bisectors of $\angle B$ and $\angle C$ intersect each other at O. Join A to O show that : OB=OC.

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64. In an isosclees triangle ABC, with AB = AC, the bisectors of $\angle B$ and $\angle C$ intersect each other at O. Join A to O show that : AO bisects $\angle A$.

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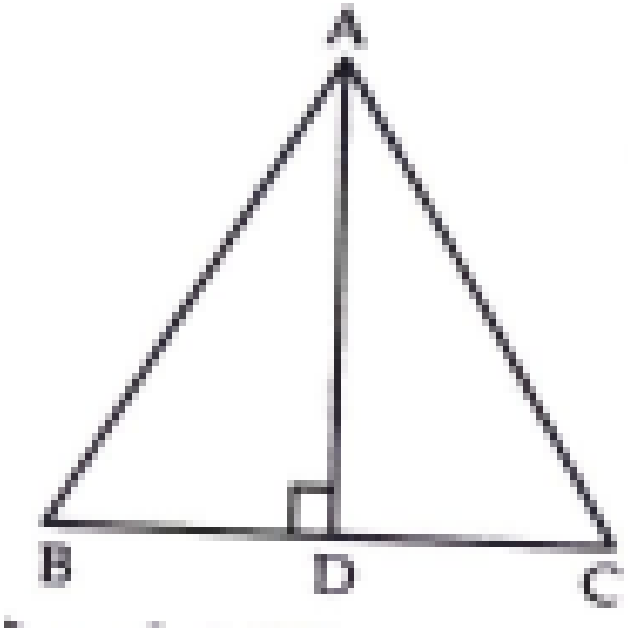
65. In $\triangle ABC$, AD is the perpendicular bisector of BC. Show that $\triangle ABC$ is an isosceles triangle in which AB=AC



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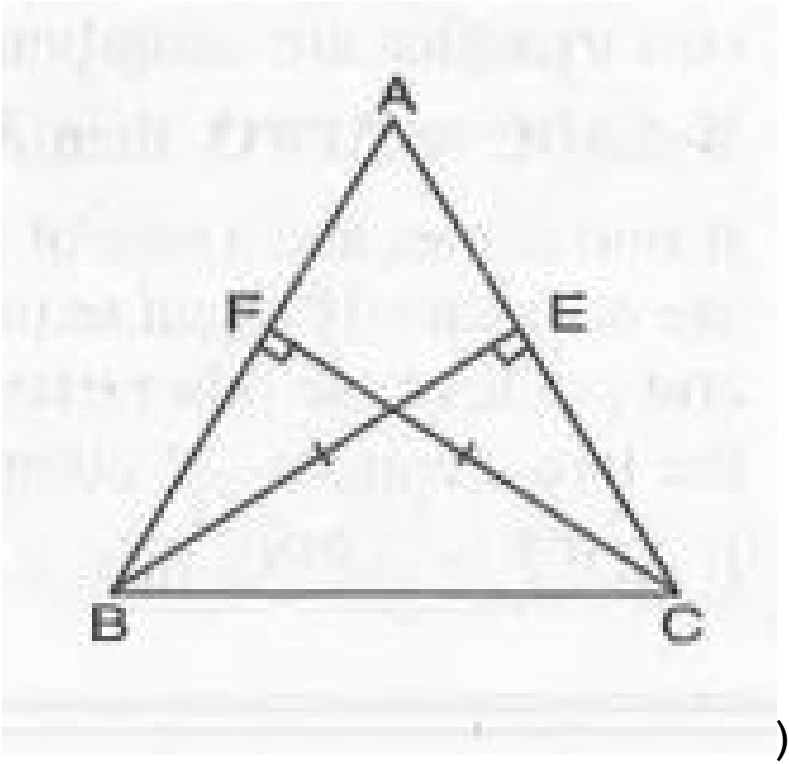
66. ABC is an isosceles triangle in which altitudes BE and CF are drawn to sides AC and AB respectively (See Fig.



). Show that these altitudes are equal.

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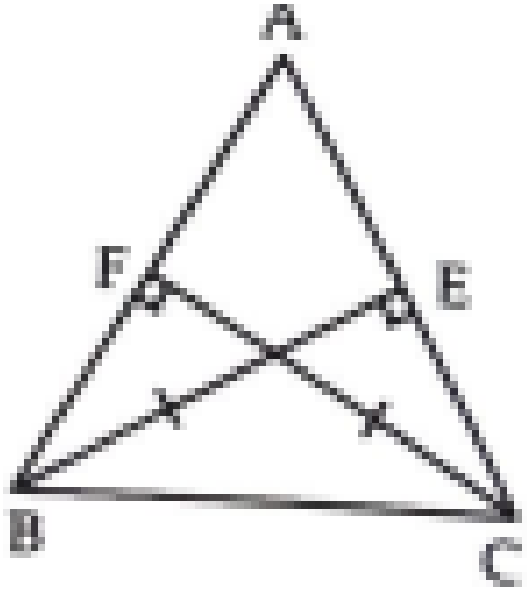
67. ABC is a triangle in which altitudes BE and CF are equal that:

$$\triangle ABE \equiv \triangle ACF$$



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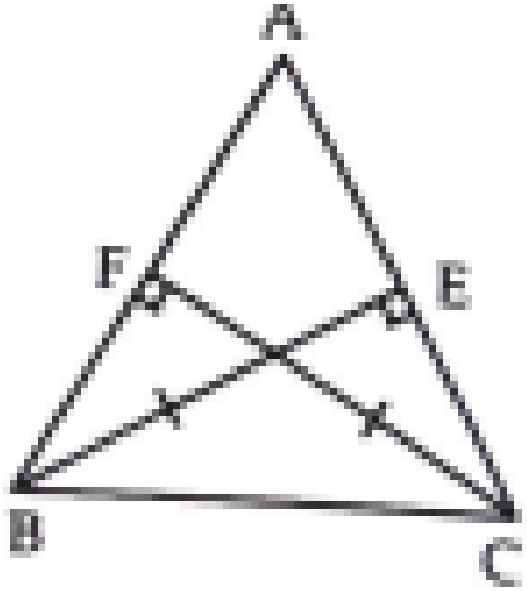
68. ABC is a triangle in which altitudes BE and CF on sides AC and AB are equal that:

ABAC, i.e. $\triangle ABC$ is na isosceles triangle.



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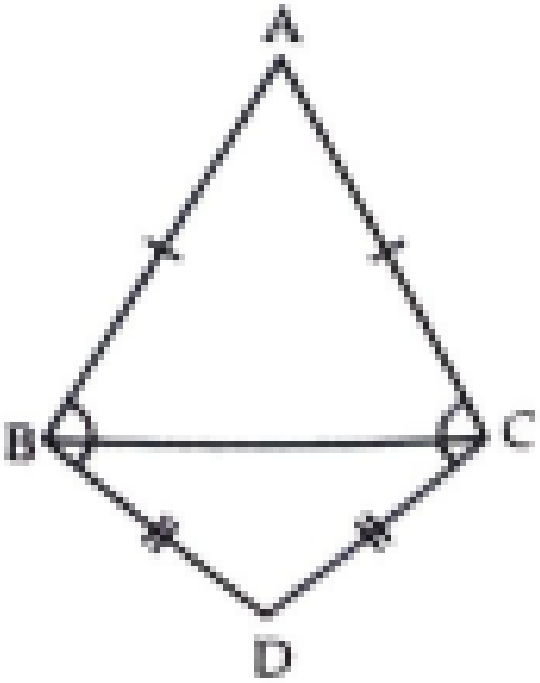
69. ABC and DBC are two isosceles triangles are same base BC. Show that $\angle ABD = \angle ACD$



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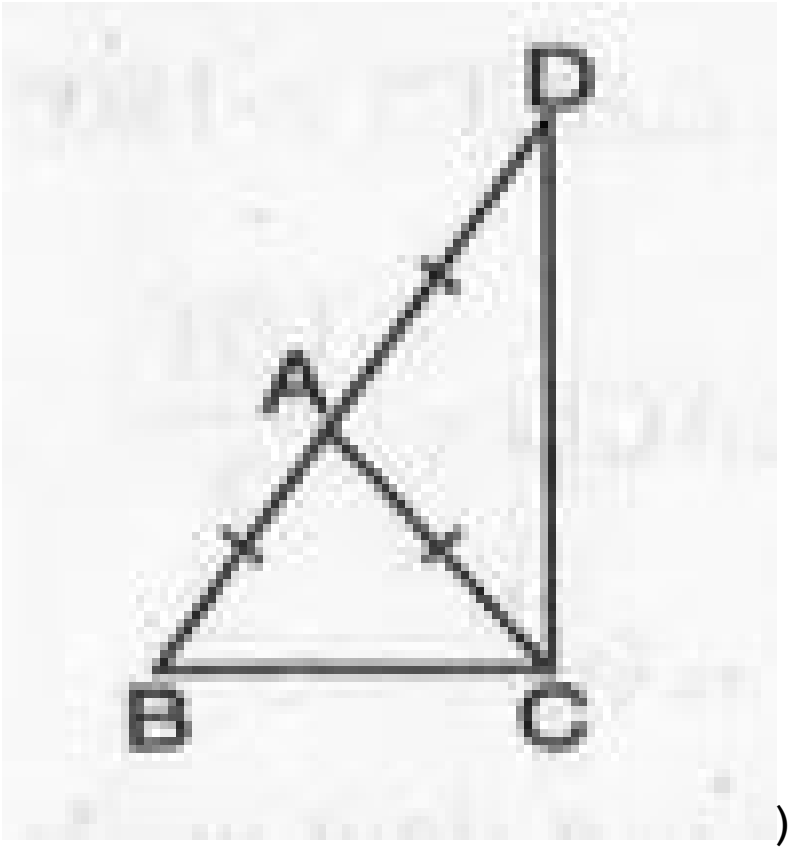
70. ΔABC is an isoscelestriangle in which AB = AC. Side BA is produced to D such that AD = AB. Show that $\angle BCD$ is a right angle (see Fig.



).

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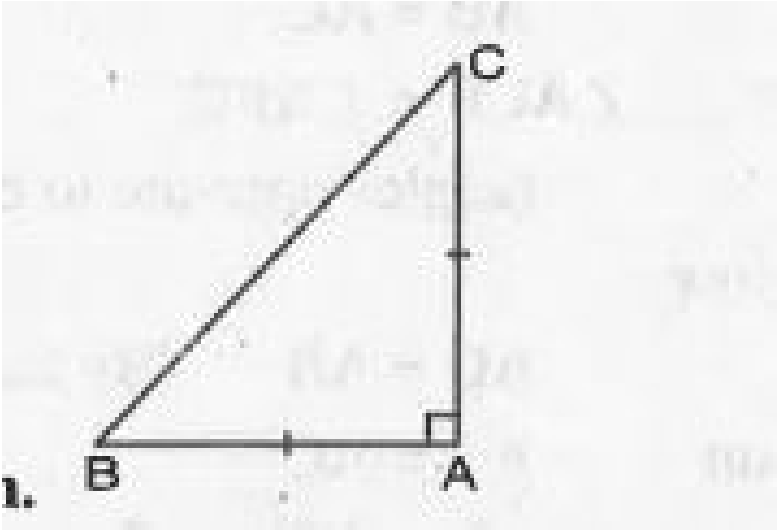
71. ABC is a right angled triangle in which $\angle A = 90^\circ$ and AB = AC. Find $\angle B$ and $\angle C$.



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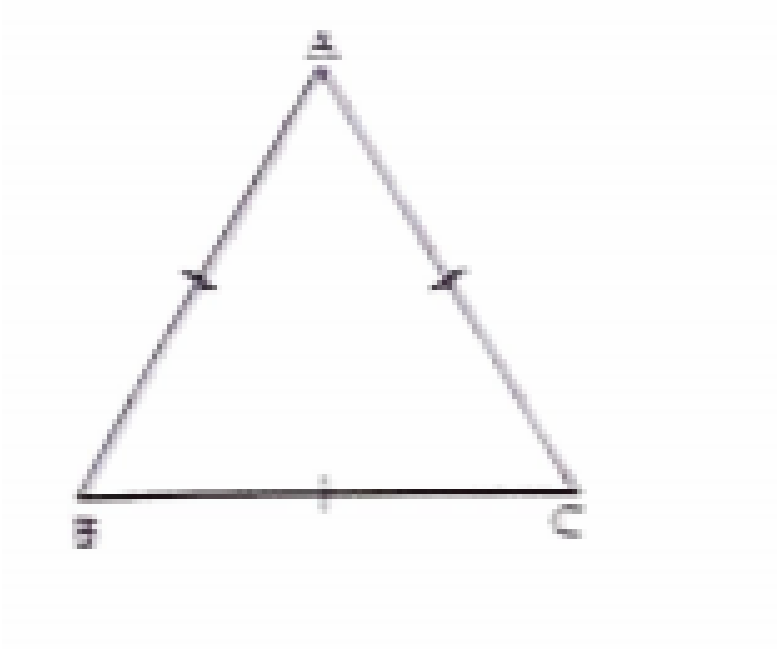
72. Show that the angles of are equilateral triangle are 60° each.



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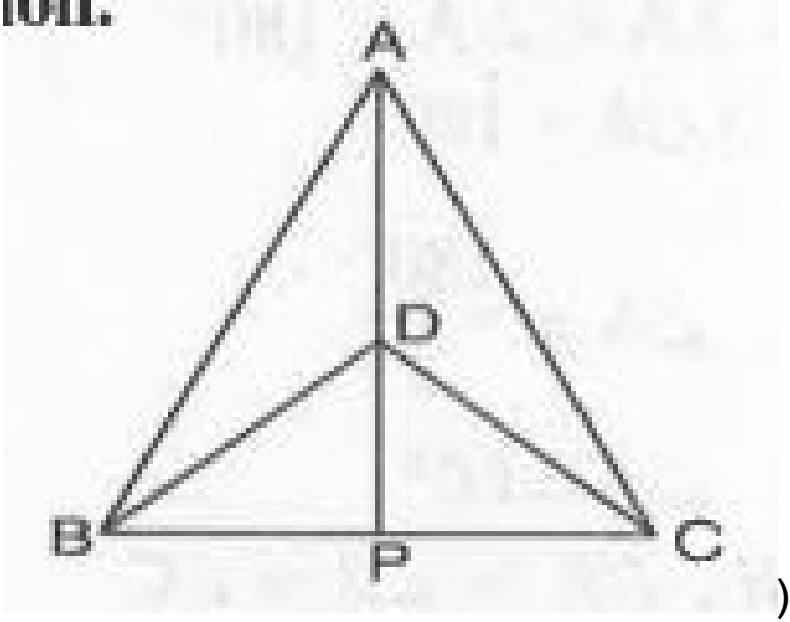
73. ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC (See Fig.



).If AD is extended to intersect BC at P, show that $\Delta ABD \cong \Delta ACD.$

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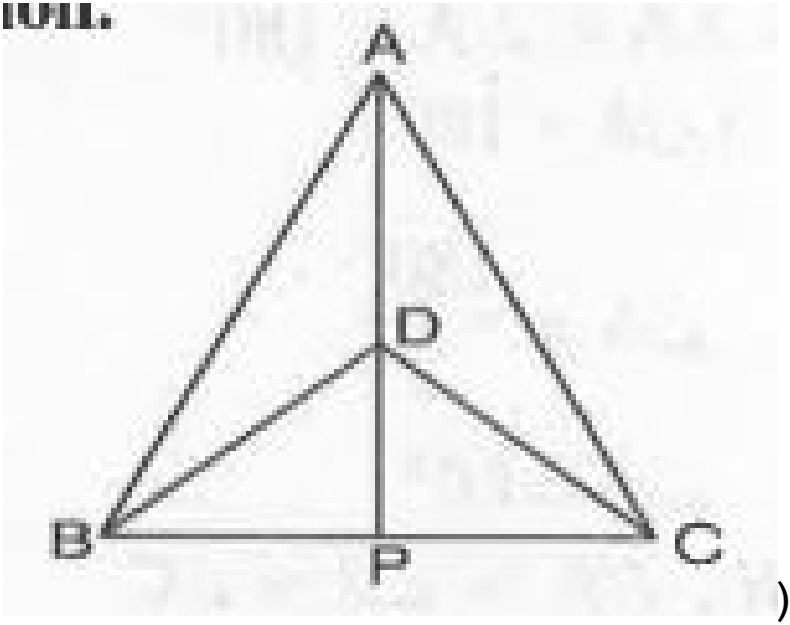
74. ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A

and D are on the same side of BC (See Fig.



).If AD is extended to intersect BC at P, show that $\Delta ABP \cong \Delta ACP.$

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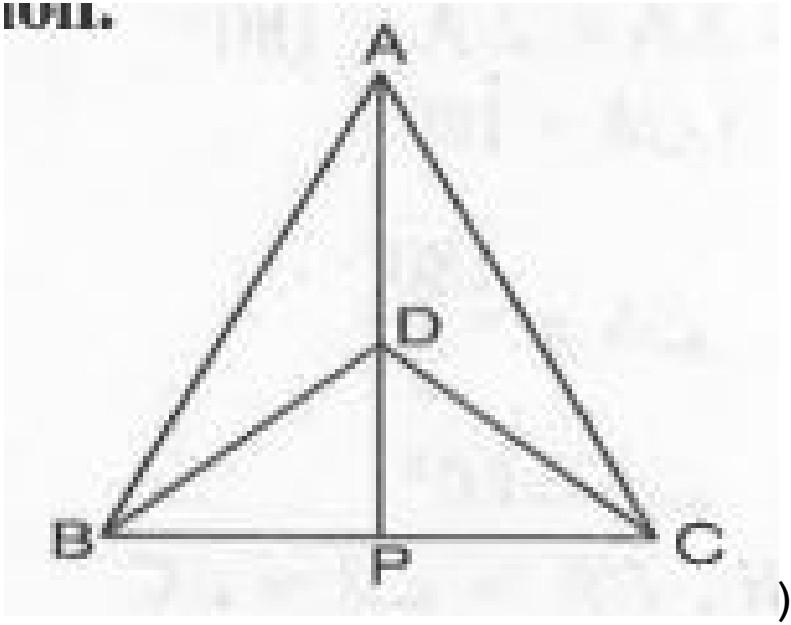
75. ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC (See Fig.



).If AD is extended to intersect BC at P, show that AP bisects $\angle A$ as well as $\angle D$.

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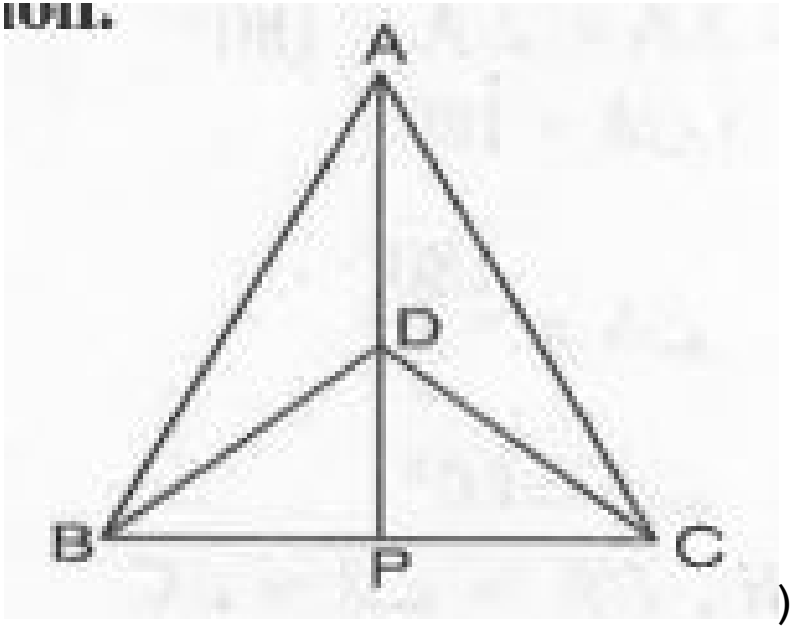
76. ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC (See Fig.



).If AD is extended to intersect BC at P, show that AP is the perpendicular bisector of BC.

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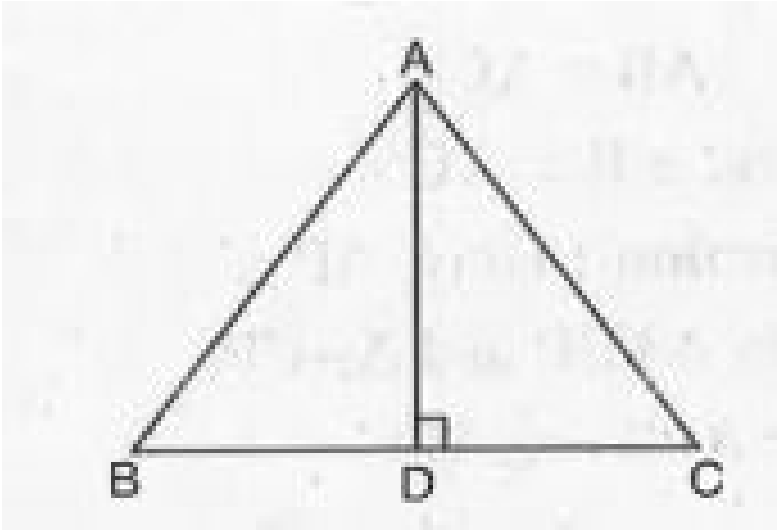
77. AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that AD bisects BC.



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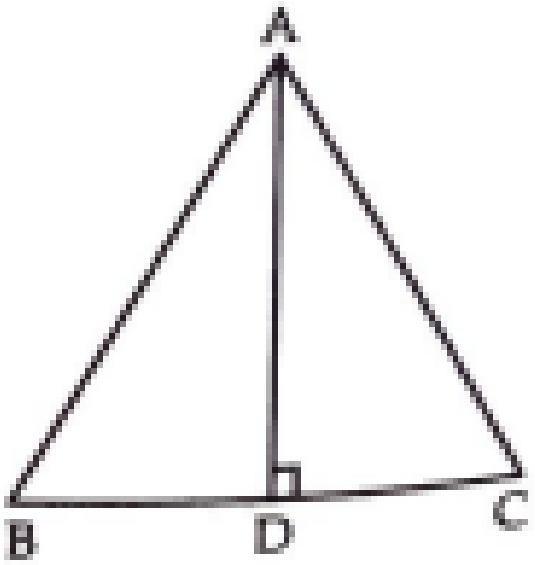
78. AD is an altitude of an isosceles triangle ABCD which AB=AC. Show that



AD bisects $\angle A$

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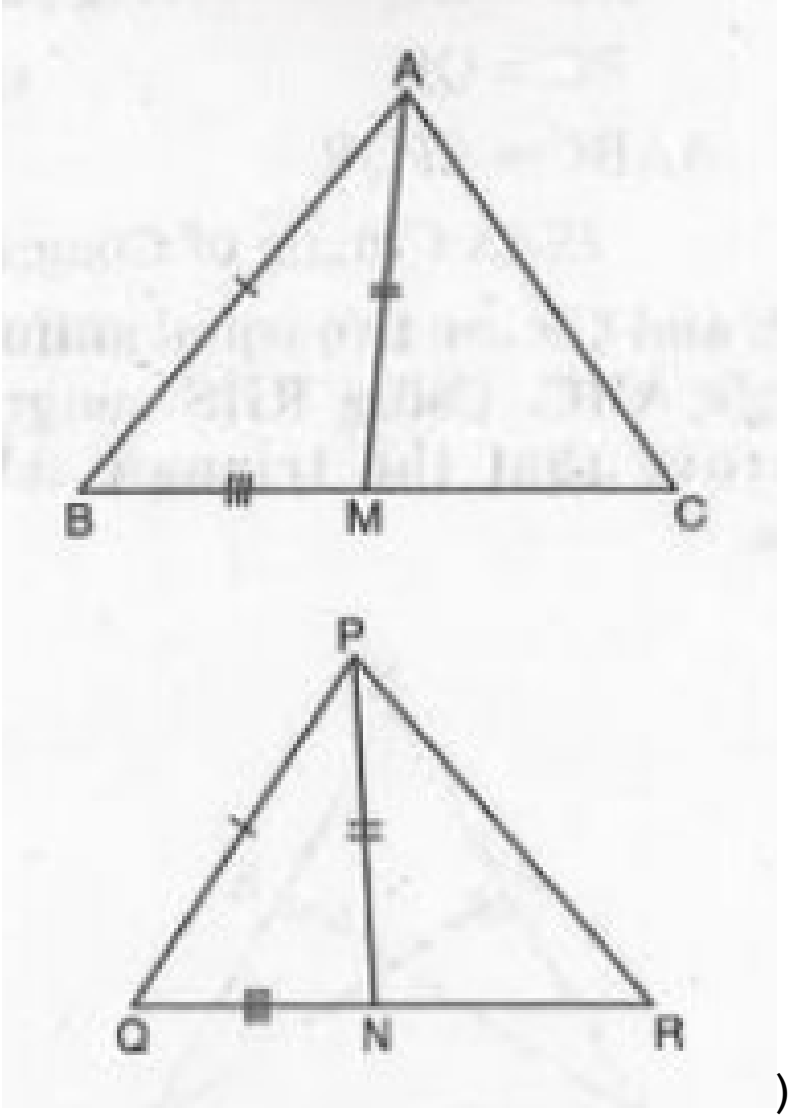
79. Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of ΔPQR (See Fig



). Show that : $\Delta ABM \cong \Delta PQN.$

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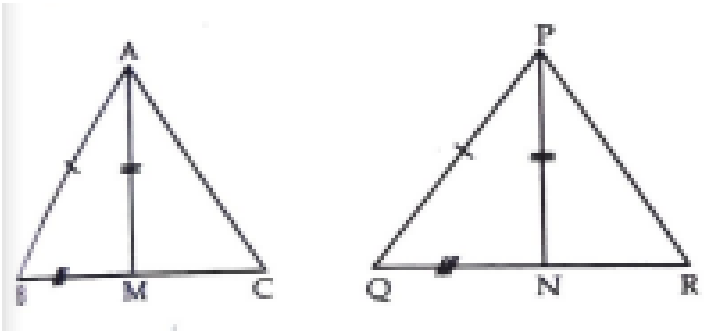
80. Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR are median PN of $\triangle PQR$. Show that

$$\triangle ABC \equiv \triangle PQR$$



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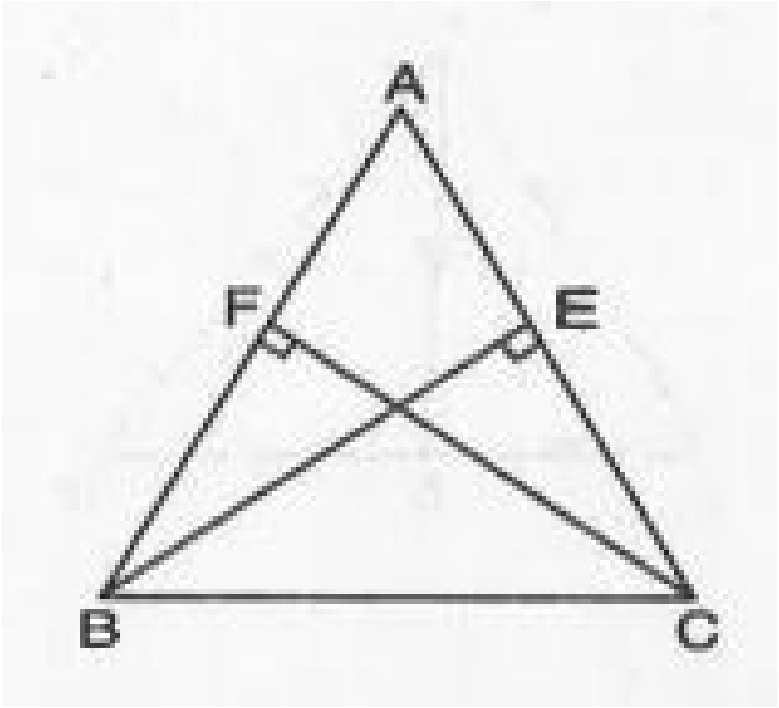
81. BE and CF are two equal altitudes of a triangle ABC. Using RHS congruence rule, prove that the triangle ABC is isosceles.



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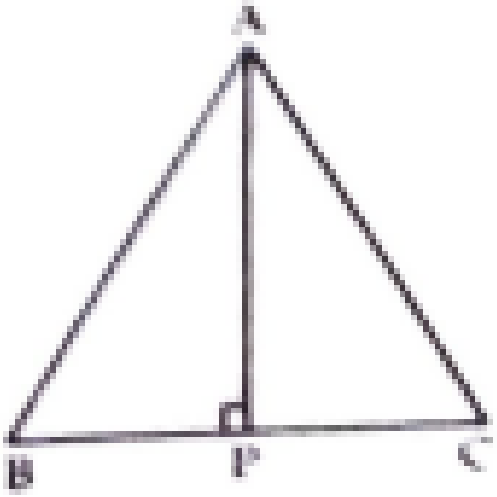
82. ABC is an isosceles triangle with AB=AC draw $AP \perp BC$ to show that $\angle B = \angle C$



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83. Show that in a right angled triangle, the hypotenuse is the longest side.

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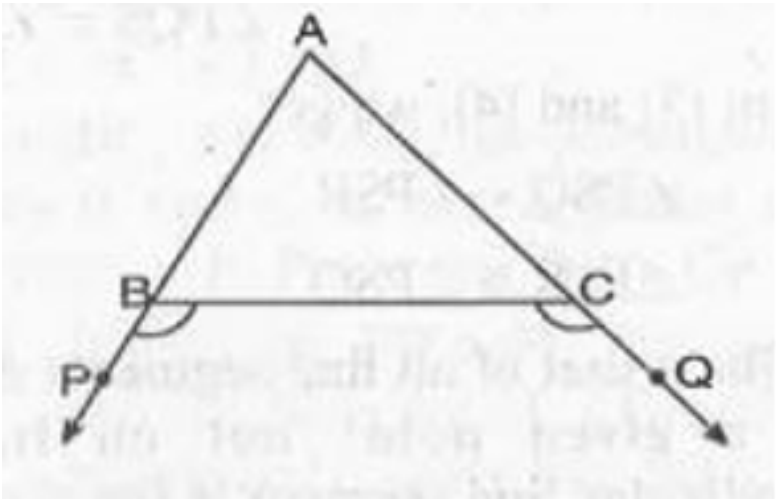
84. In Fig.



, sides AB and AC of ΔABC are extended to points P

and Q respectively. Also $\angle PBC < \angle QCB$. Show that $AC > AB$.

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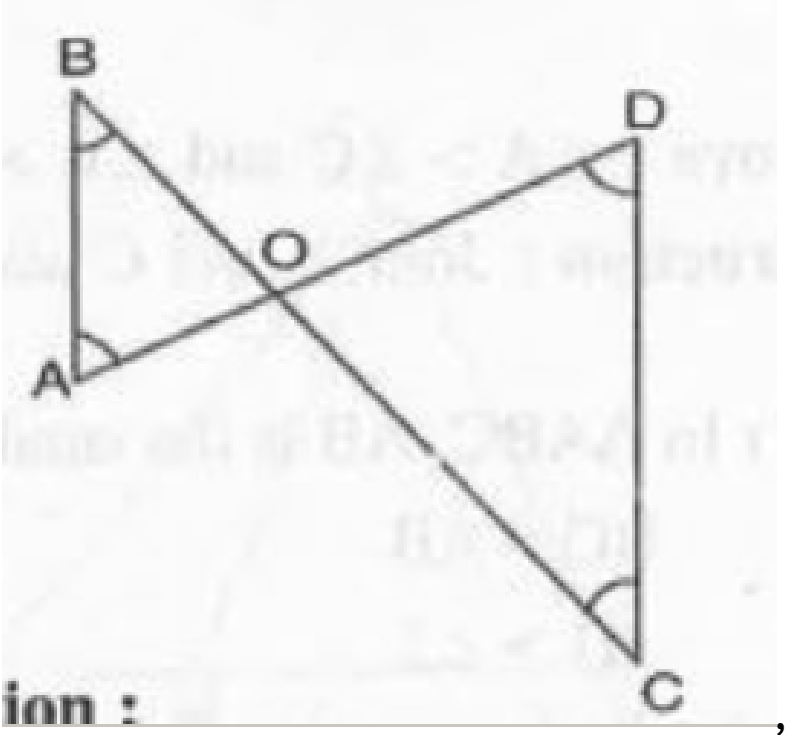
85. In Fig.



ion :

$\angle B < \angle A$ and $\angle C < \angle D$. Show that $AD < BC$.

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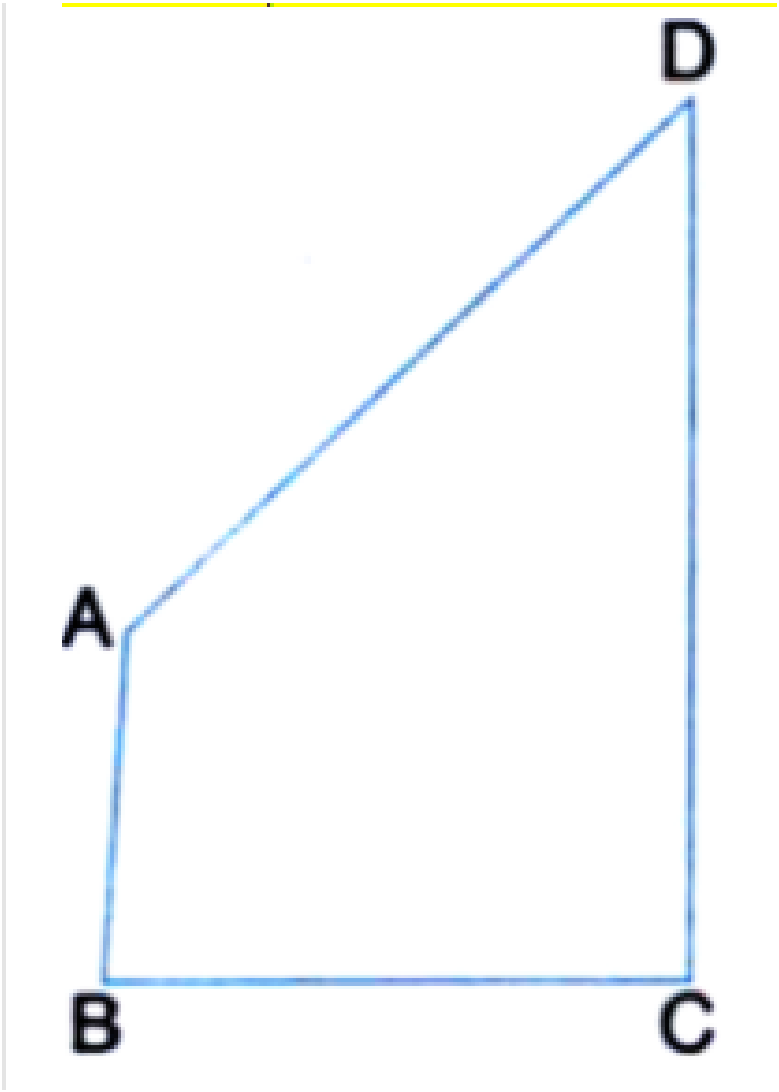
86. AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD (see Fig. 7.50). Show that $\angle A > \angle C$ and

$\angle B > \angle D.$



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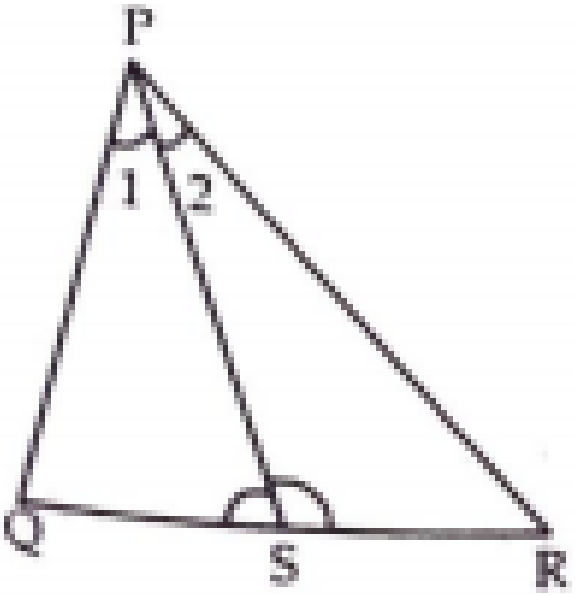
87. In fig. PR>PQ and PS bisects $\angle QPR$. Prove that $\angle PSR > \angle PSQ$



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88. Show that of all line segments drawn from a given point not on it, the perpendicular line segment is the shortest.

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89. ABC is a triangle. Locate a point in the interior of ΔABC which is equidistant from all the vertices of ΔABC.

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90. In a triangle locate a point in its interior which is equidistant from all the sides of the triangle.

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91. In a huge park, people are concentrated at the points

A: where there are difference slides for children

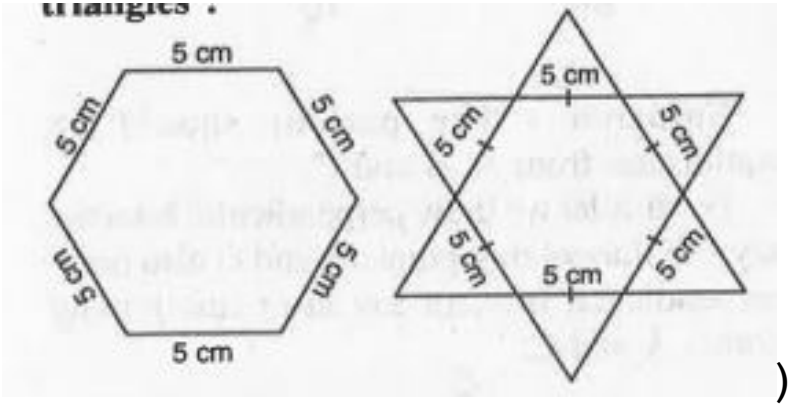
B: near which a man-made lake is situated

C: which is near to a large parking and each

where should an icecream parlour be set up that maximum number of persons can approach it

Watch Video Solution

92. Complete the hexagonal rangoli and the star Rangolies (see Figs.



) by filling them with as many equilateral triangles of side 1 cm as you can. Count the number of triangles in each case. Which has more triangles ?

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93. In trianlges ABC and PQR, $\angle A = \angle Q$ and $\angle B = \angle R$ which side of $\triangle PQR$ should be equal to side AB of $\triangle ABC$ so that the two trianles are congruent? Give reasons for your answer.

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94. If .... sides(s) of a triangle is/are equal to the three sides of other triangle the two triangles are congruent.

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95. If .... And the included angle of one triangle are equal to two sides and the included angle of the other triangle then two triangles are congruent.

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96. If .... sides(s) of a triangle is/are equal to the three sides of other triangle the two triangles are congruent.

Watch Video Solution

97. Is it possible to construct a triangle with length of its sides as 4 cm, 3 cm and 7 cm give reasons for your answer.

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98. By applying ASA congruence rule, it is to be established that $\triangle ABC \cong \triangle QRP$ and it is given that BC = RP. What additional

information is needed to establish the congruence?

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99. If $\triangle PQR \equiv \triangle EDF$, then is it true to say the PR=Ef? Give reason for your answer.

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100. In $\triangle PQR$, $\angle P = 70^\circ$ and $\angle R = 30^\circ$ which side of this triangle is the longest? Give

reason for your answer.

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101. AD is a median of the triangle ABC. Is it true that AB+BC+CA>2AD? Give reasond for your answer.

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102. M is a point on side BC of a triangle ABC such that AM is that bisector of $\angle BAC$. Is it

true to say that perimeter of the triangle is greater than 2AM? Give reasond for your answer.

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103. Is it possible to construct a triangle with lenghts of its sides as 9cm, 7cm and 17 cm? give reason for your answer.

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104. Is it possible to construct a triangle with lengths of its sides as 8 cm, 7 cm and 4 cm? give reasons for your answer.

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105. ABC is an isosceles triangle AB=AC and BD and CE are its two medians. Show that BD=CE.

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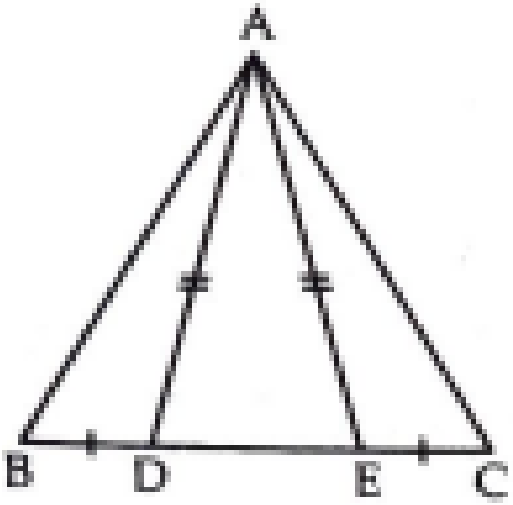
106. In fig. D and E are points on side BC of $\triangle ABC$ such that BD=CE and AD=AE. Show that $\triangle ABD \equiv \triangle ACE$



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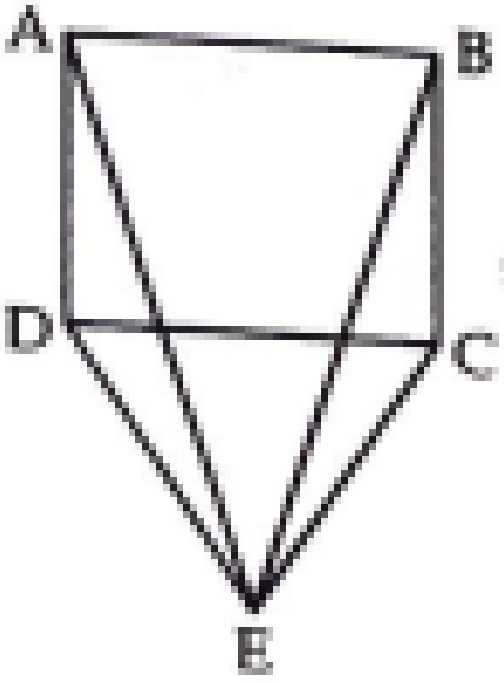
107. CDE is an equilateral triangle formed on a side CD of a square ABCD(see fig.). Show that

$\triangle ADEq \equiv \triangle BCE$



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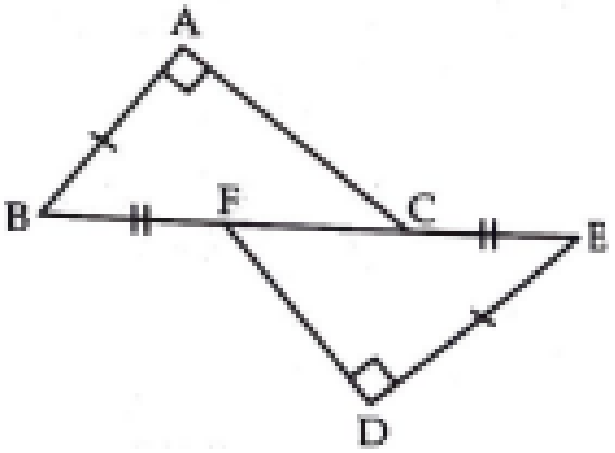
108. In fig. $BA \perp AC, DE \perp DF$ such that BA=DC and BF=EC. Show that

$\triangle ABC \equiv \triangle DEF$



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109. Q is a point on the side SR of a $\triangle PSR$ such that PQ=PR. Prove that PS>PQ.

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110. If S is the mid-point of side QR of a ΔPQR, then prove that $PQ + PR = 2PS$.

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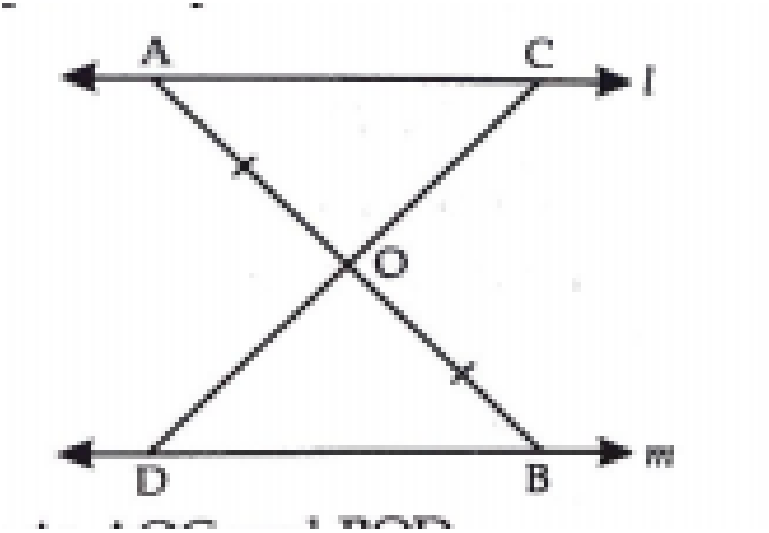
111. In the fig. l||m and O is the mid point of the line segment. Prove that O is also the mid point of any line segment CD having its end points on l and m respectively



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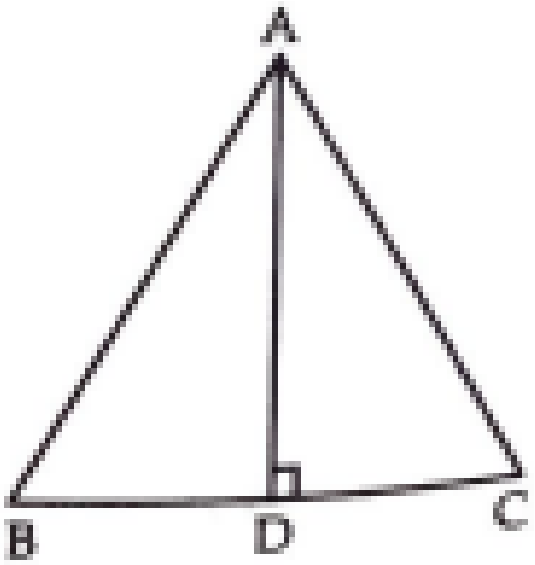
112. AD is an altitude of an isosceles triangle ABCD which AB=AC. Show that



AD bisects $\angle A$

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113. Bisectors of the angles B and C of an isosceles triangle with AB=AC intersect each other at O. BO is produced to a point M. prove that $\angle MOC = \angle ABC$.

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114. Bisectors of the angles B and C of an isosceles triangle with ABC with AB=AC intersect each other at O. show that the

external angle adjacent to $\angle ABC$ is equal to $\angle BOC$.

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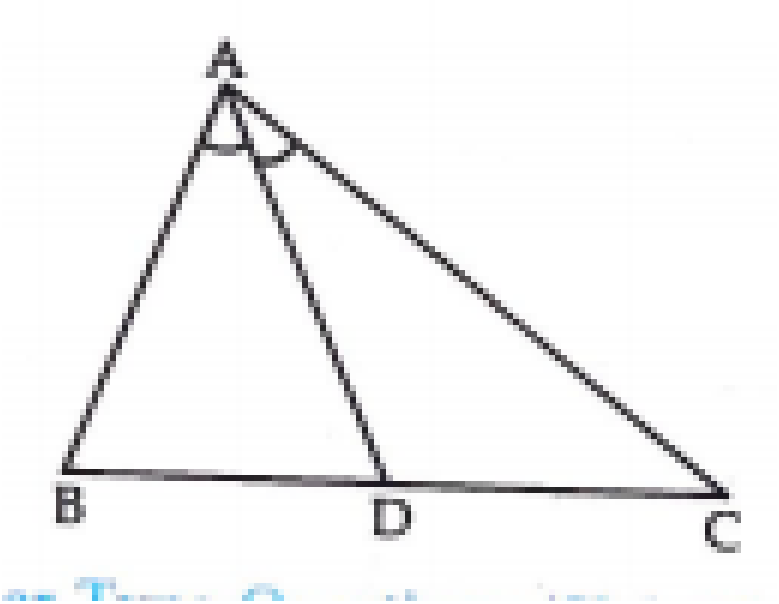
115. In $\triangle ABC$, if the AD is a bisector of $\angle A$ show that AB>BD and AC>CD



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116. an equilateral triangle?

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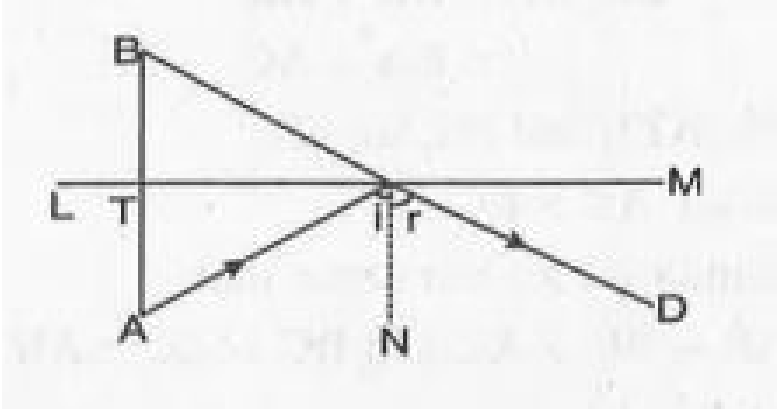
117. The image of an object placed at a point before a plane mirror LM is seen at the point B by an observer at D as shown in the given fig.



Prove that the image is as far behind the mirror as the object is in front of the mirror.

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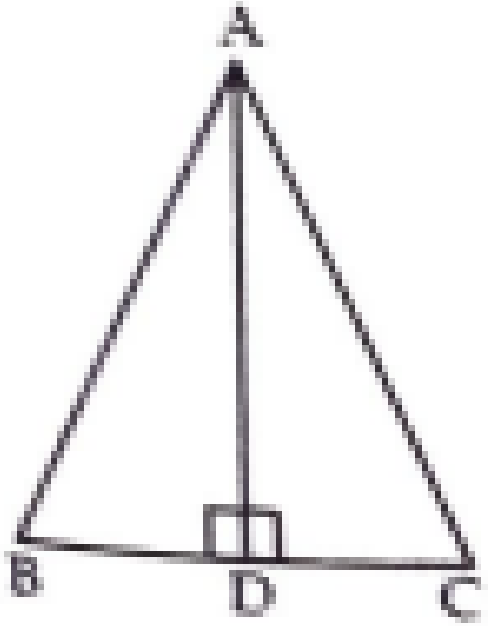
118. ABC is an isosceles triangle with AB=AC and D is a point on an BC such that

$AD \perp BC$ to prove that $\angle BAD = \angle CAD$,



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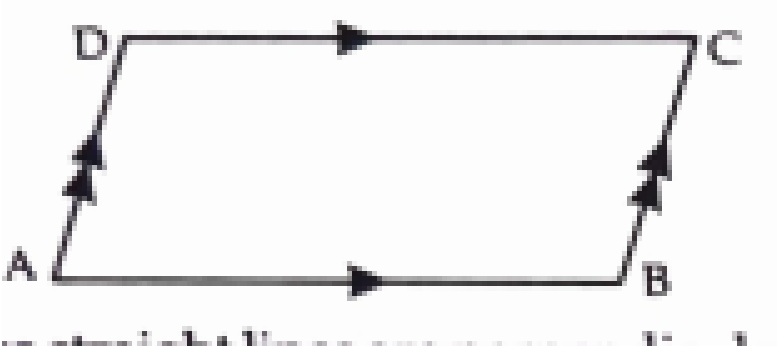
119. In the fig. ABCD is a quadrilateral in which AB||DC and AD||BC prove that

$\angle ADC = \angle ABC$



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120. ABC is a right angled with AB=AC. Bisector of $\angle A$ meets BC at D. prove that BC=2AD

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121. O is a point in the interior of a square ABCD such that OAB is an equilateral triangle. Show that $\triangle OCD$ is an isosceles triangle.

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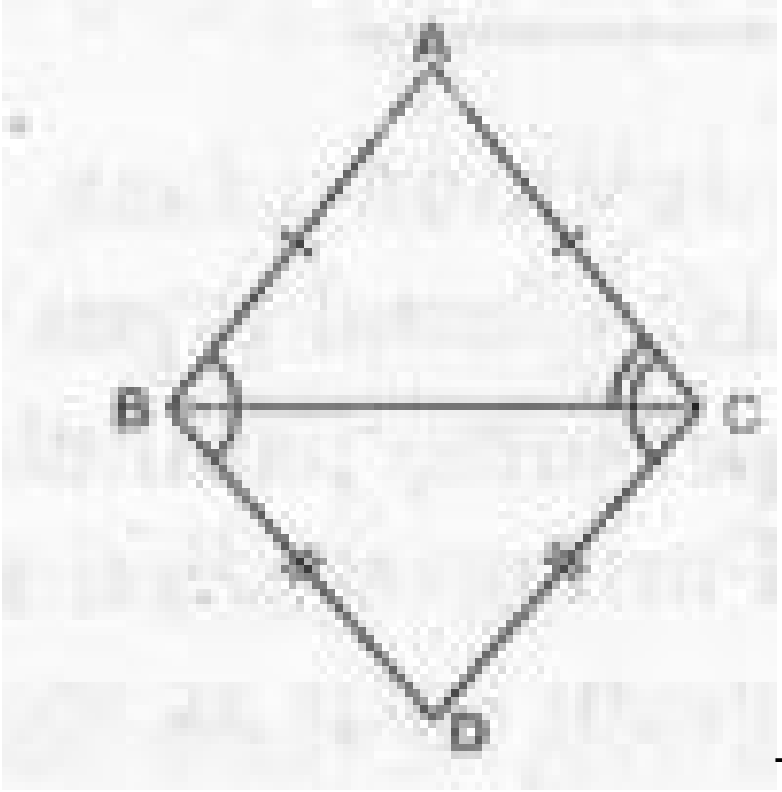
122. ABC and DBC are two isosceles triangles on the common base BC.



Then :

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123. ABC is an isosceles triangle AB=AC and BD and CE are its two medians. Show that BD=CE.

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124. Prove that the sum of any two sides of a triangle is greater than twice the median drawn to the third side.

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125. ABCD is quadrilateral. Is

$AB + BC + CD + DA < 2(AC + BD)$?

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126. ABCD is quadrilateral. Is

AB + BC + CD + DA < 2 (AC + BD)?

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127. In a triangle ABC, D is the mid point of side AC such that $BD = \frac{1}{2}AC$. Show that $\angle ABC$ is a right angle.

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128. Show that the line segments joining the mid-points of opposite sides of a quadrilateral bisect each other.

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129. Two lines l and m are intersect at the point O is a point on a line n passng through the passed O such that P is equidistant from l and m. find than n is the bisector of the angle formed by l and m.

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130. Line segment joining the mid points M and N of parallel sides AB and DC, respectively of a trapezium ABCD is perpendicular to both the sides AB and DC. Prove that AD=BC.

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131. ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then

ABCD

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132. ABC is a right triangle such that AB=AC and bisector of angle C intersects the side AB at D. prove that AC+AD=BC.

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133. AB and CD are the smallest and largest sides of a quadrilateral ABCD. Out of $\angle B$ and

angleD` decide which is greater.

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134. In a triangle, the angle opposite to the longer side is :

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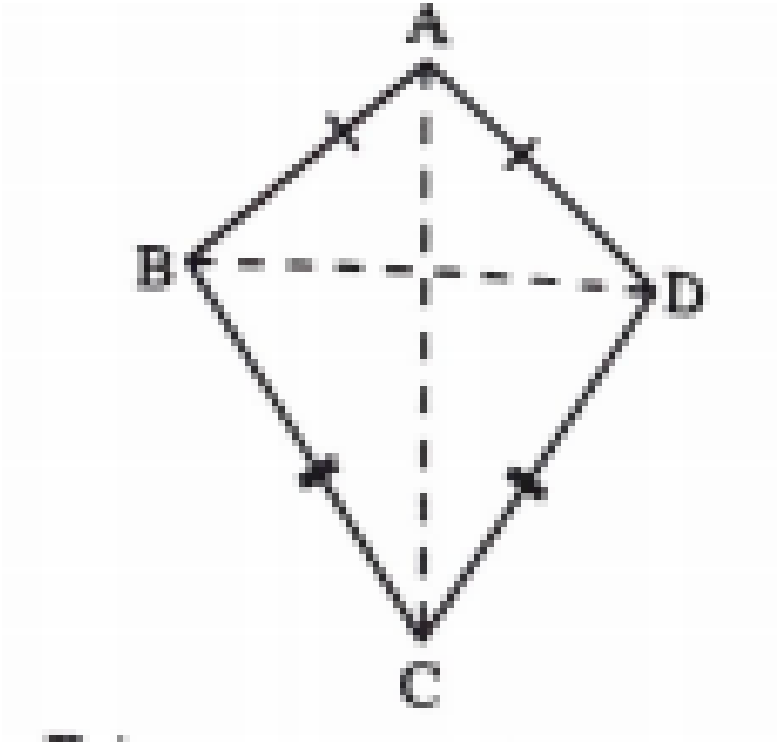
135. In the fig. :ABCD is a quadrilateral in which AD and BC=DC. Prove that

AC is the perpendicular bisector of BD.



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Exercise

1. PQR is a triangle in which PQ=PR and S is any point on the side PQ. Through S, a line is drawn parallel to QR and intersecting PR at T. prove that PS=PT.

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2. In an isosclees triangle ABC, with AB = AC, the bisectors of $\angle B$ and $\angle C$ intersect each other at O. Join A to O show that : AO bisects $\angle A$.

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3. P is a point on the bisector of an angle $\angle ABC$. If the line through P parallel to AB meets BC at Q. prove that triangle BPQ is isosceles.

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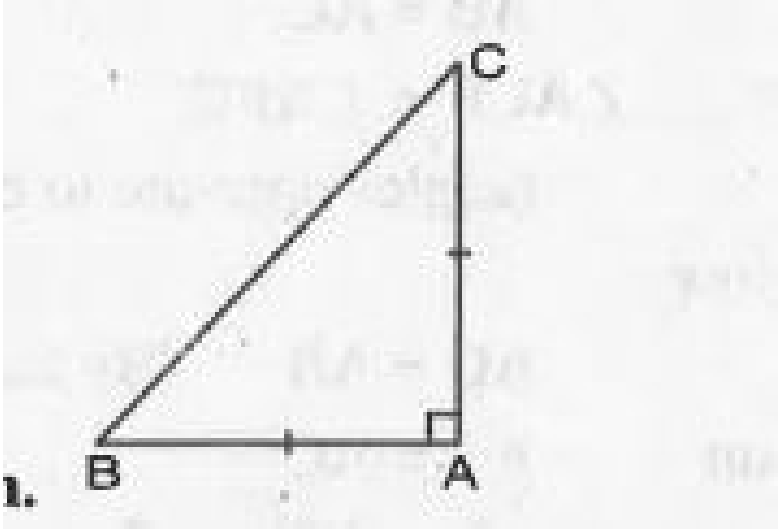
4. ABC is a right angled triangle in which $\angle A = 90^\circ$ and AB = AC. Find $\angle B$ and $\angle C$.



1.

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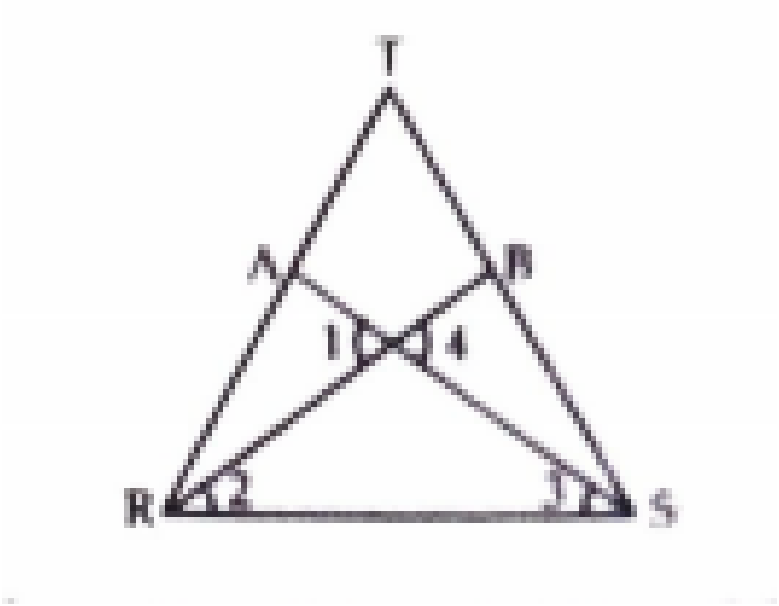
5. In the fig. RT=TS, $\angle 1 = 2\angle 2$ and $\angle 4 = 2\angle 3$.

Prove that $\triangle RBT \equiv \triangle SAT$



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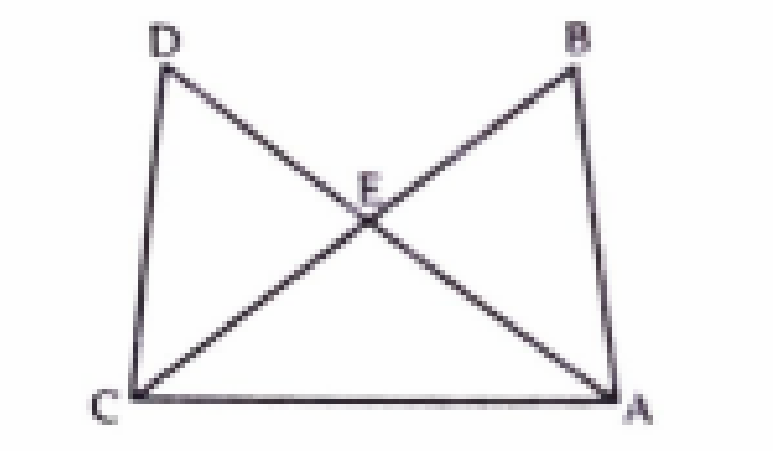
6. In the fig AB=CD and AD=BC. Prove that

$\triangle ADC \equiv \triangle CBA$



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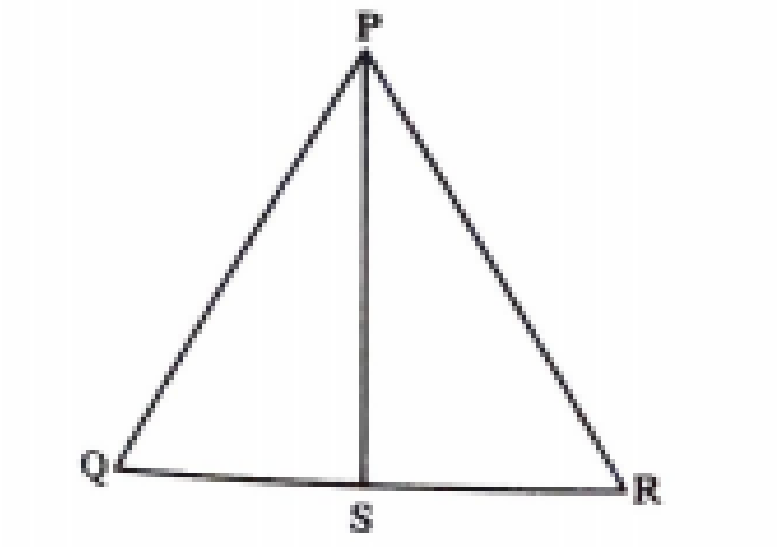
7. In $\triangle PQR$, S is the point on the side QR.

Prove that PQ+QR+RP>2PS



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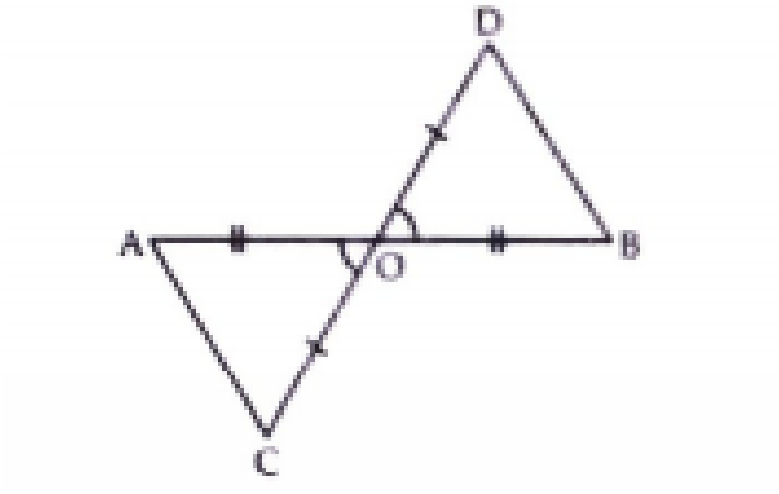
8. In the given fig. O is the point of each of the line segment AB and CD prove that AC=BD and

AD||BD



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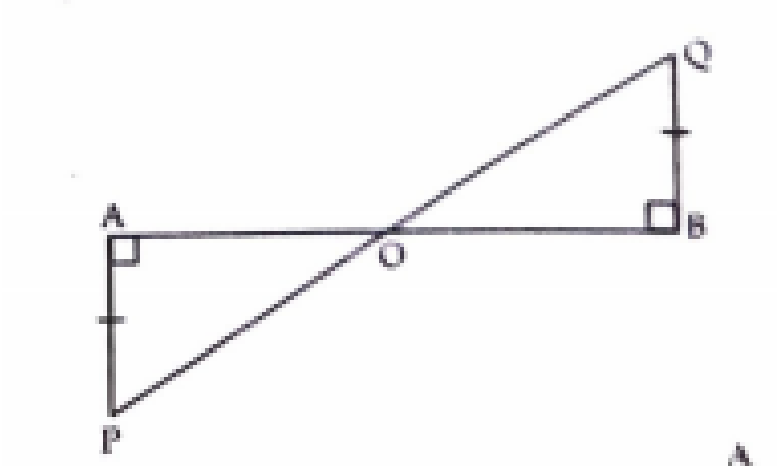
9. In the given figure $PA \perp AB$, $QB \perp AB$ and PA=QB intersects AB at O, show that O is

the mid point of AB as well as that of PQ



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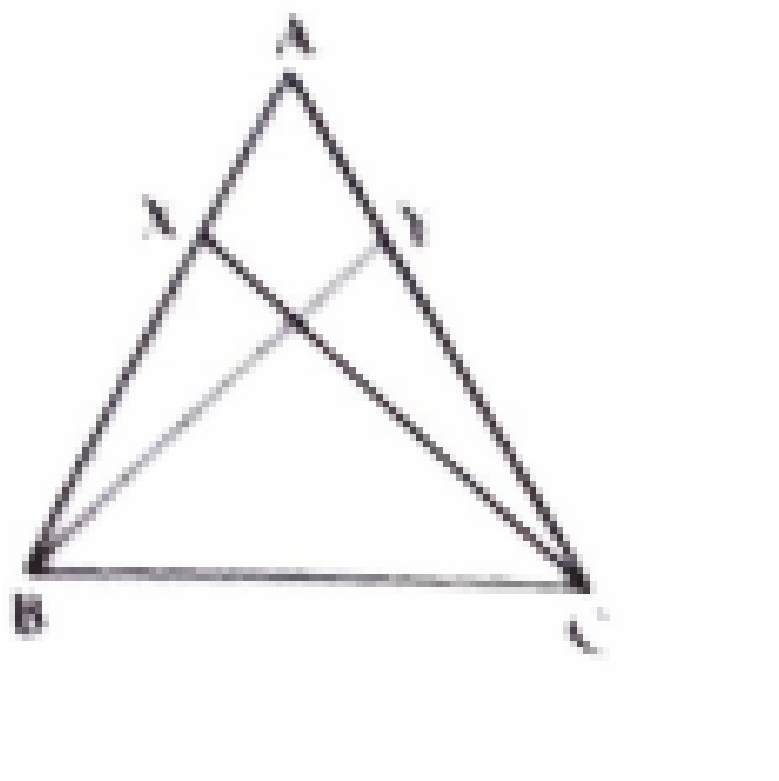
10. In the fig. X and Y are respectively two points on equal sides AB and AC of $\triangle ABC$

such that AX=AY. Prove that CX=BY



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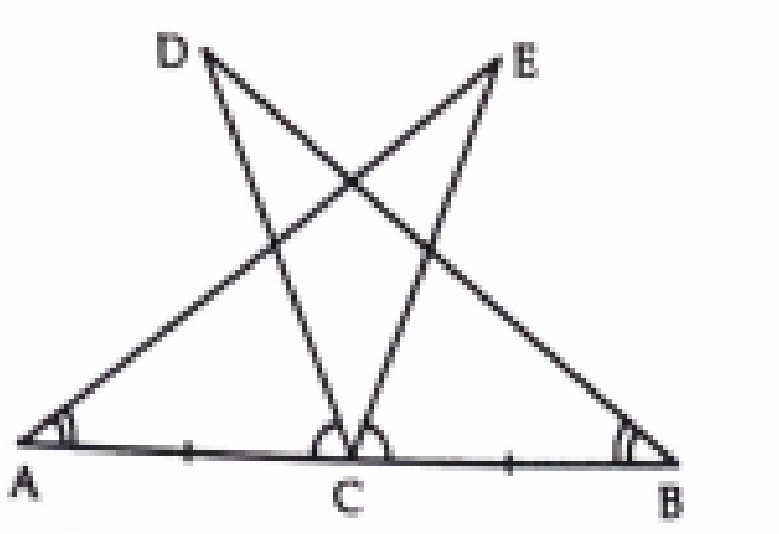
11. In the fig. C is the mid point of AB. If $\angle DCA = \angle ECB$ and $\angle DBC = \angle EAC$, prove that DC=EC



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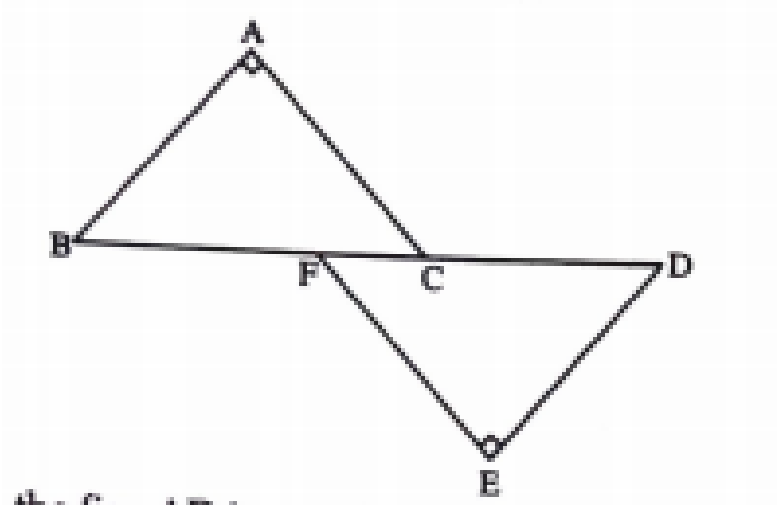
12. In the fig. $BA \perp AC$ and $DE \perp EF$ such that BA=DE and BF=DC. Prove that AC=EF



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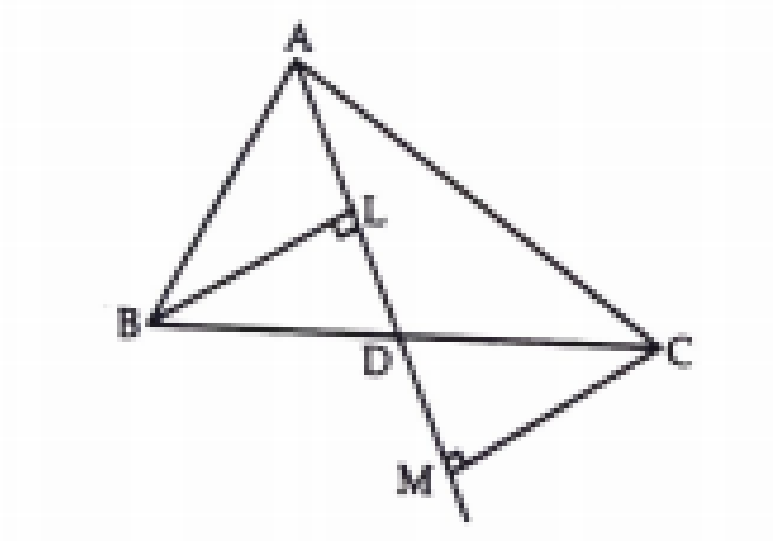
13. In the fig. AD is a median of $\triangle ABC$. If BL and CM are drawn perpendicular on AD and

AD produced, prove that BL=CM



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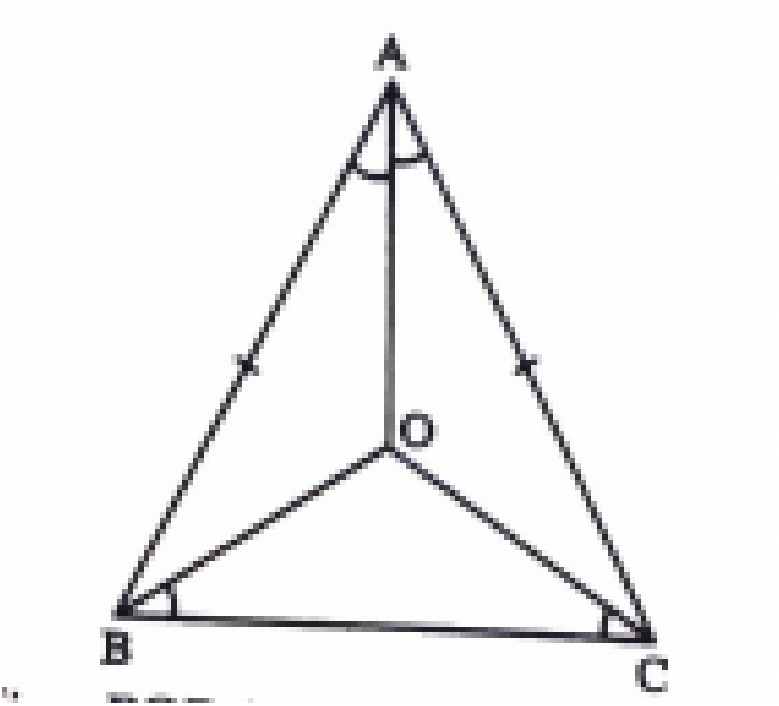
14. In the fig. triangle AB=AC and bisectors of $\angle B$ and $\angle C$ meet at a point O. prove that

BO=CO and the ray AO is bisector of angleA



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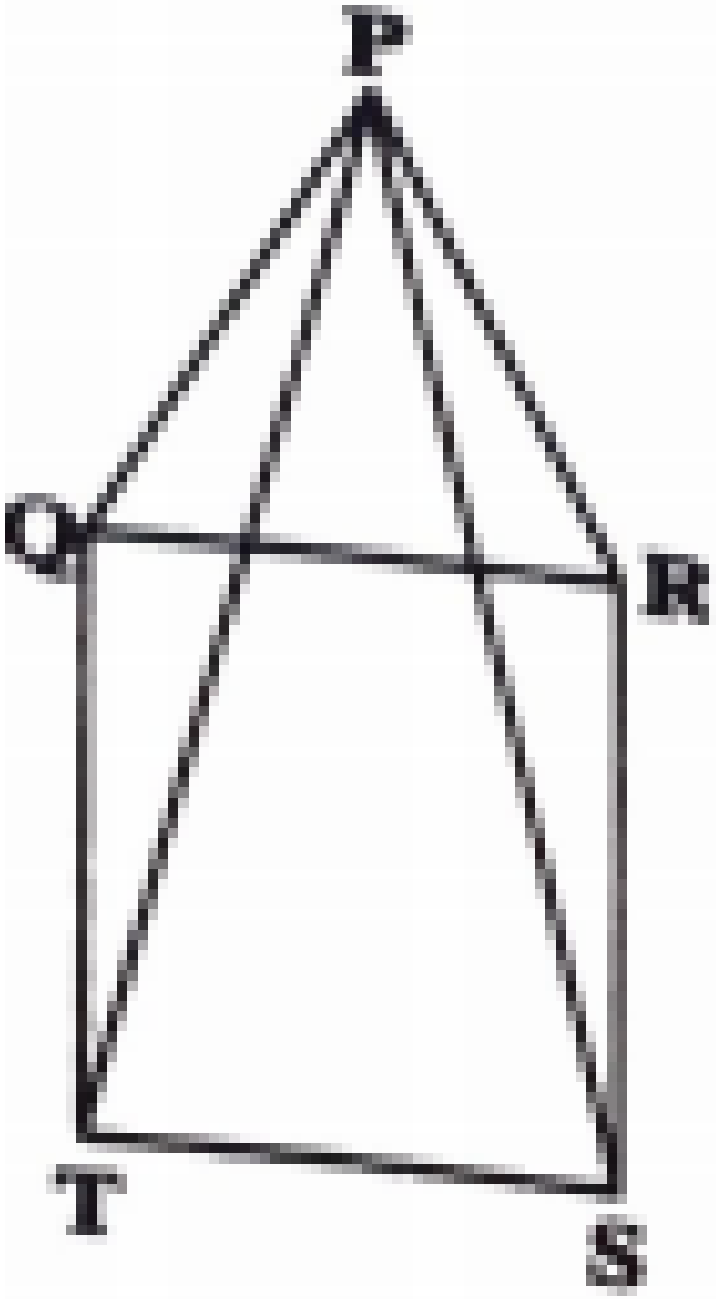
15. In the fig, PQR is an equilateral triangle and

QRST is a square. Prove that:


P
Q
R
T
S

PT=PS

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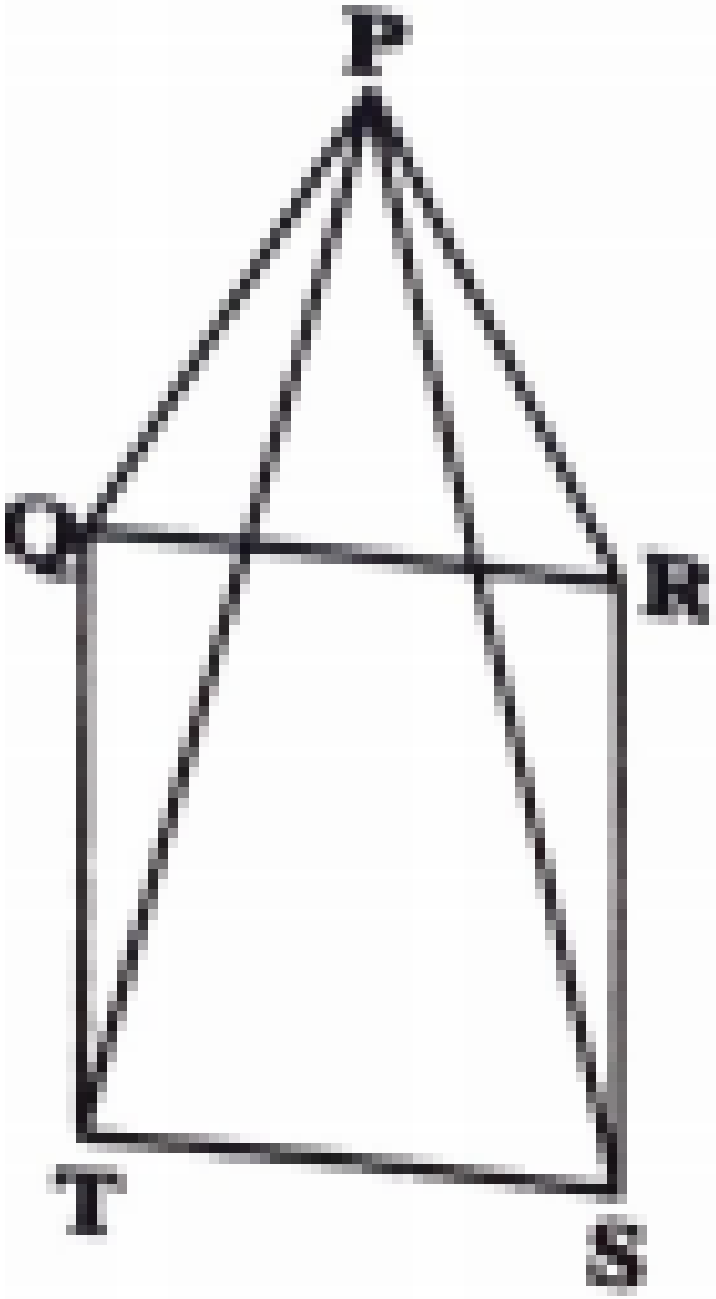
16. In the fig, PQR is an equilateral triangle and QRST is a square. Prove that:


P
Q
R
T
S

$\angle PSR = 15^\circ$

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17. Prove that the median from the vertex of an isosceles triangle is the bisector of the vertical angle.

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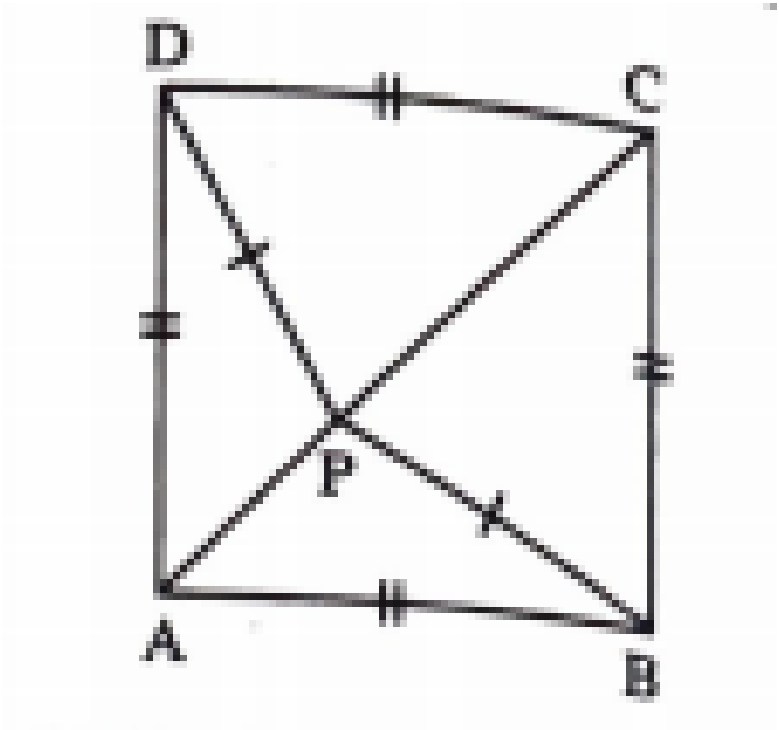
18. In the fig. ABCD is square and P is a point on such that PB=PD. Prove that CPA is a

striaght line



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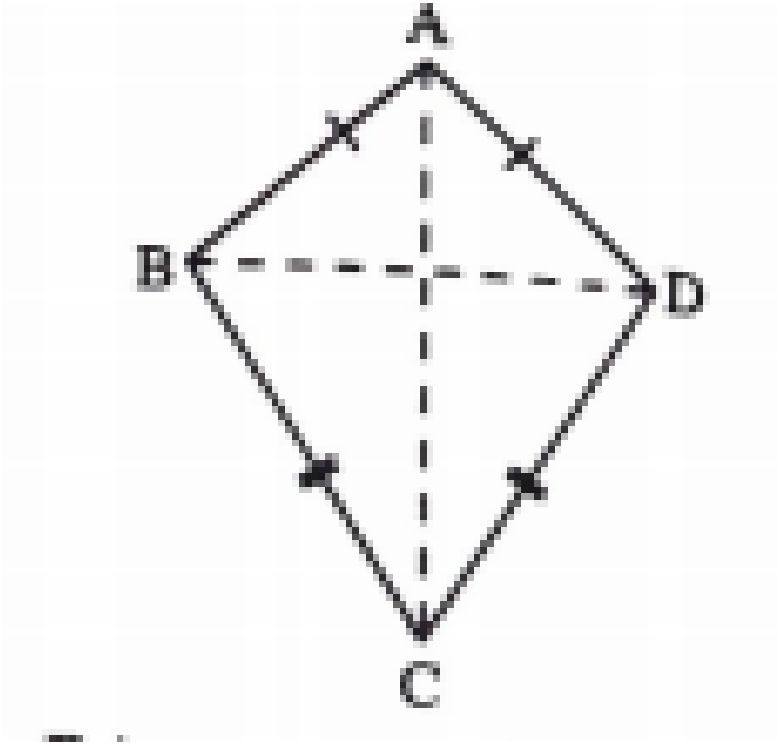
19. In the fig. :ABCD is a quadrilateral in which AD=AB and BC=DC. Prove that

AC bisects $\angle A = \angle C$



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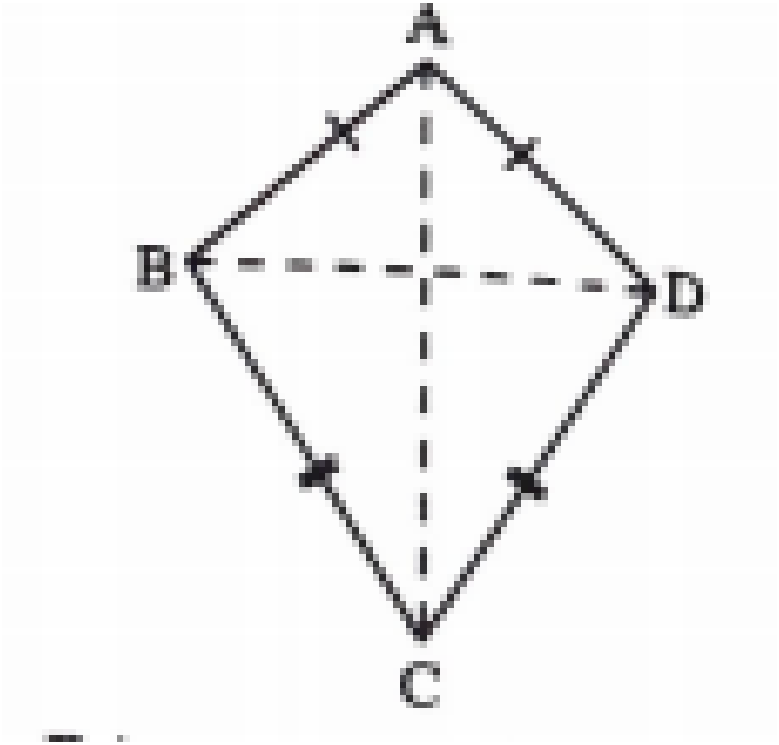
20. In the fig. :ABCD is a quadrilateral in which

AD and BC=DC. Prove that

AC is the perpendicular bisector of BD.



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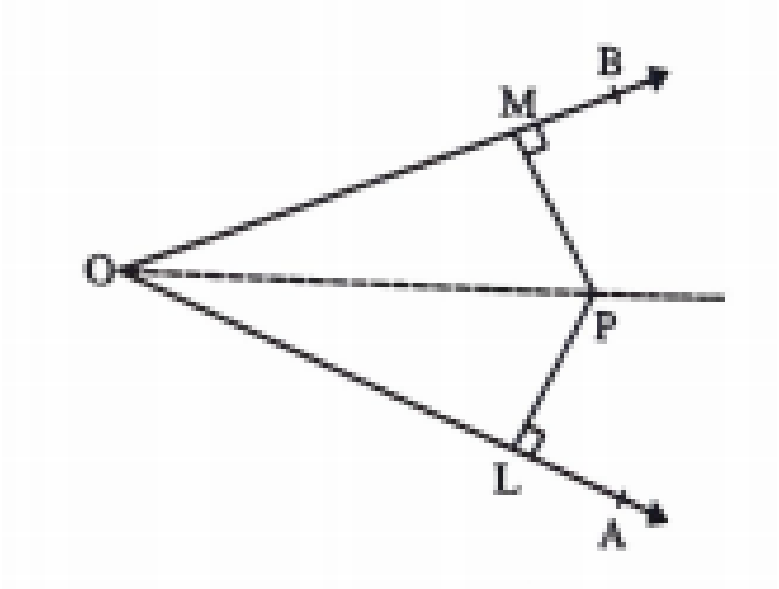
21. In the fig. P is a point in the interior of $\angle AOB$, $PL \perp OA$ and $PM \perp OB$ such that

PL=PM, show OP is the bisector of $\angle AOB$



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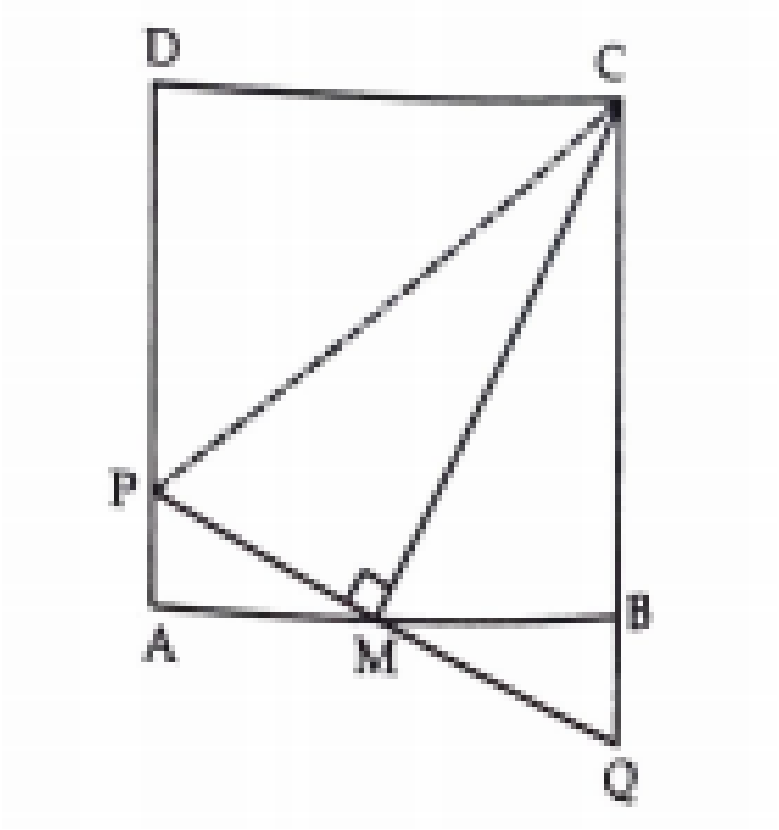
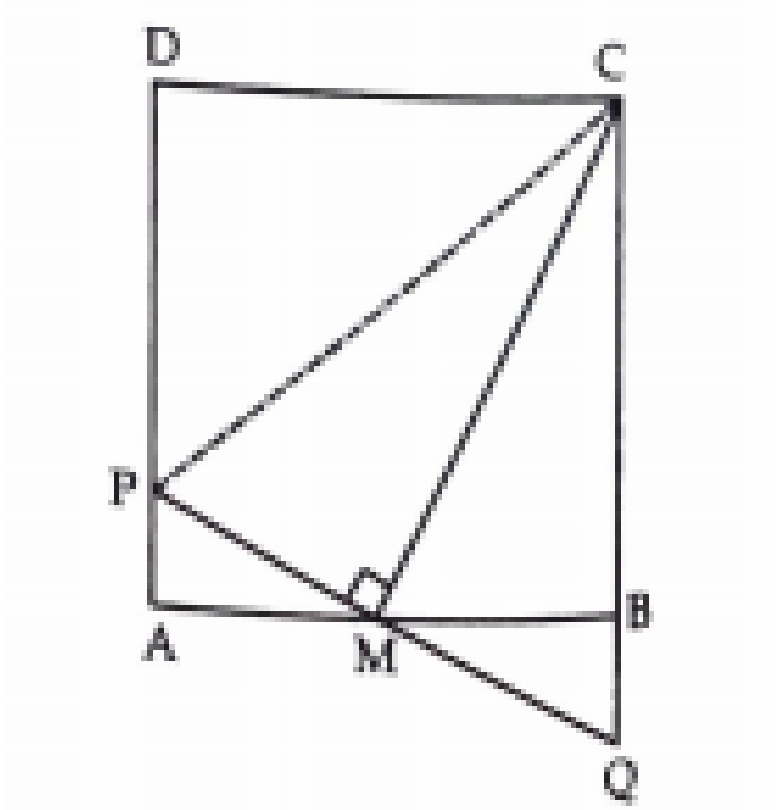
22. In the fig. ABCD is a square M is the mid point and $PQ \perp CM$ meets AD at and CB produced prove that



PA=BQ?

Watch Video Solution

23. In the fig. ABCD is a square M is the mid point and $PQ \perp CM$ meets AD at and CB produced prove that



PA=BQ?

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24. In triangle ABC, if $\angle A = 40^\circ$ and $\angle B = 60^\circ$. Determine the longest and shortest sides of the triangle.

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25. In $\triangle ABC$, if $\angle A = 90^\circ$ and $\angle B = 35^\circ$ which is the longest side?

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26. In $\triangle ABC$, if $\angle B = \angle C = 45^\circ$ which is the longest side?

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27. Is it possible to draw a triangle with sides of the lenghts 2 cm, 3 cm and 7 cm?

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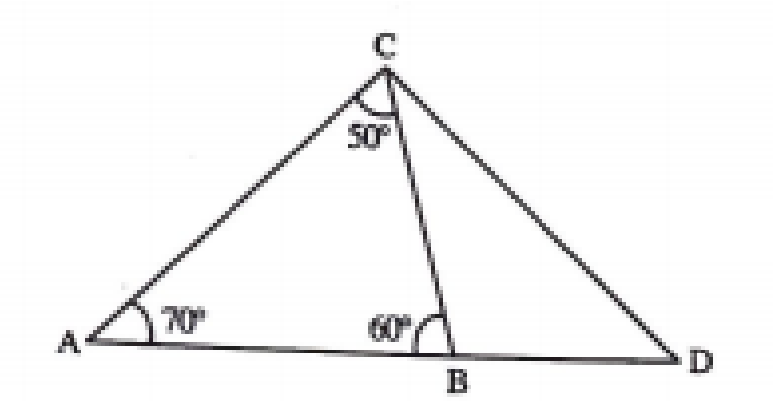
28. In $\triangle ABC$, side AB is produced to D such that BD=BC. If $\angle B = 60^\circ$ and $\angle A = 70^\circ$, prove that:



AD>CD?

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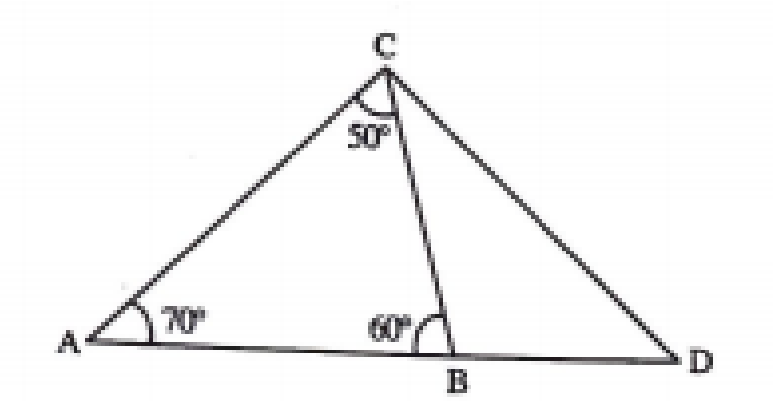
29. In $\triangle ABC$, side AB is produced to D such that BD=BC. If $\angle B = 60^\circ$ and $\angle A = 70^\circ$, prove that:



AD>CD?

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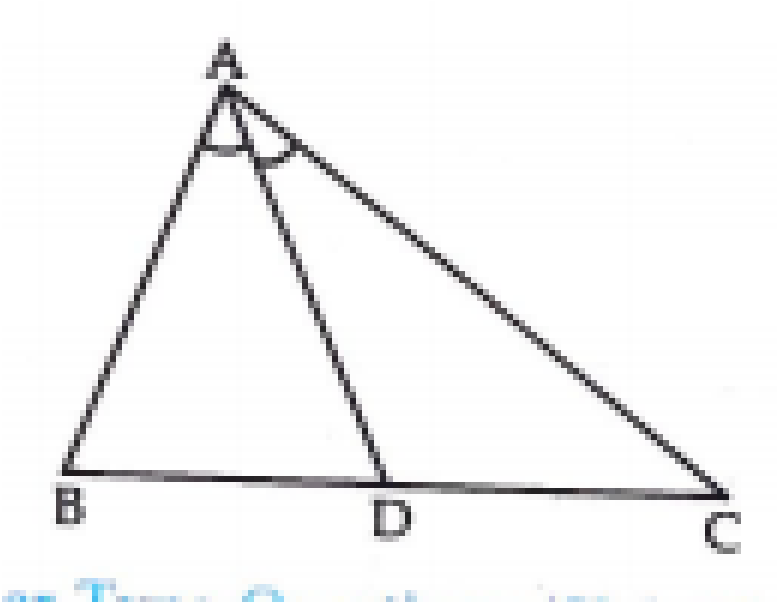
30. In $\triangle ABC$, if the AD is a bisector of $\angle A$ show that AB>BD and AC>CD



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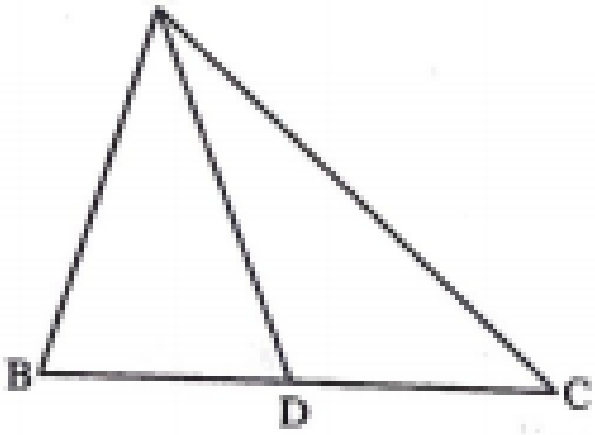
31. In the fig. AC>AB and AD is the bisector of $\angle A$ show that $\angle ADC > \angle ADB$



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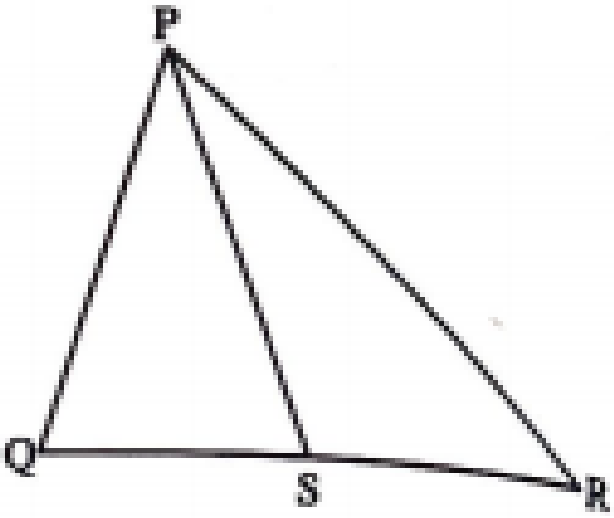
32. In the $\triangle PQR$, S is any point on the side QR show that PQ+QR+RP+2PS



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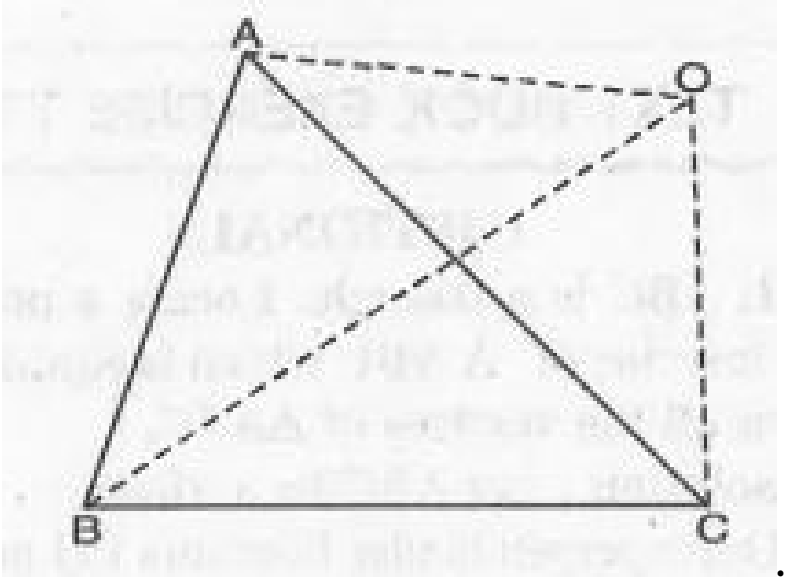
33. O is any point in the exterior of a ΔABC.

Prove that

$2(OA + OB + OC) > (AB + BC + CA)$



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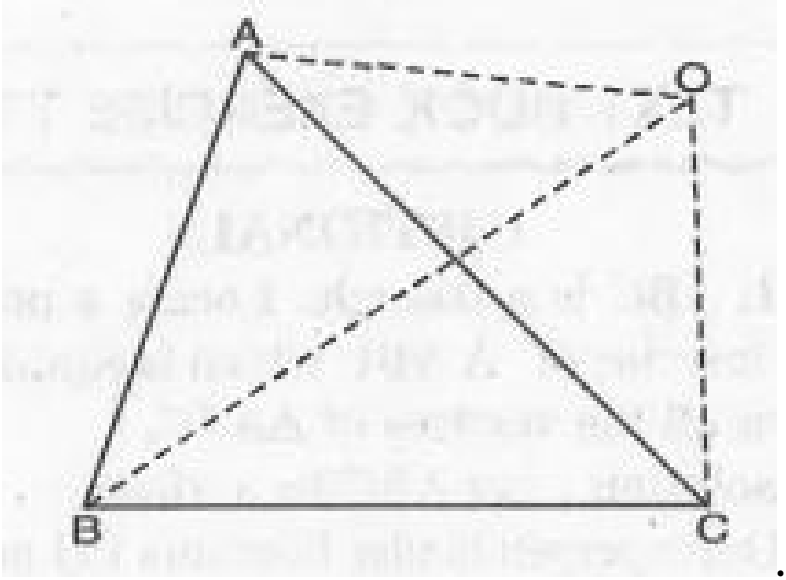
34. O is any point in the exterior of a ΔABC.

Prove that

$2(OA + OB + OC) > (AB + BC + CA)$



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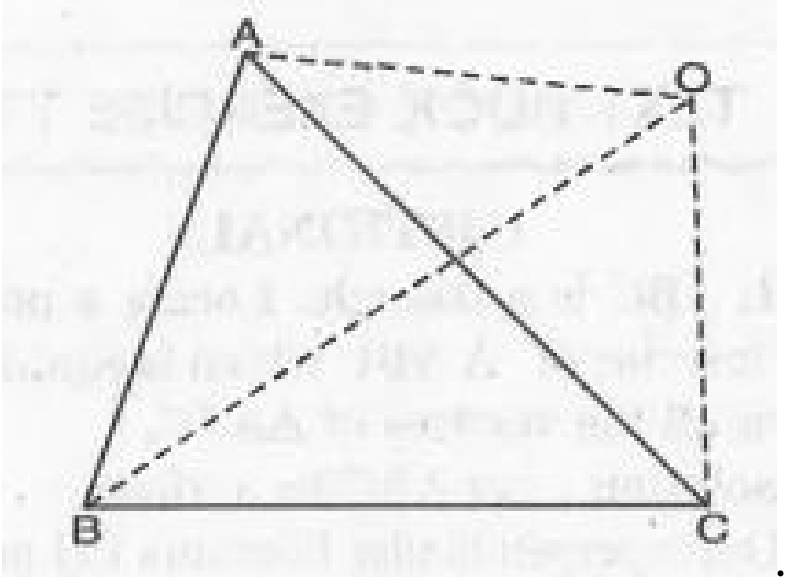
35. O is any point in the exterior of a ΔABC.

Prove that

$2(OA + OB + OC) > (AB + BC + CA)$



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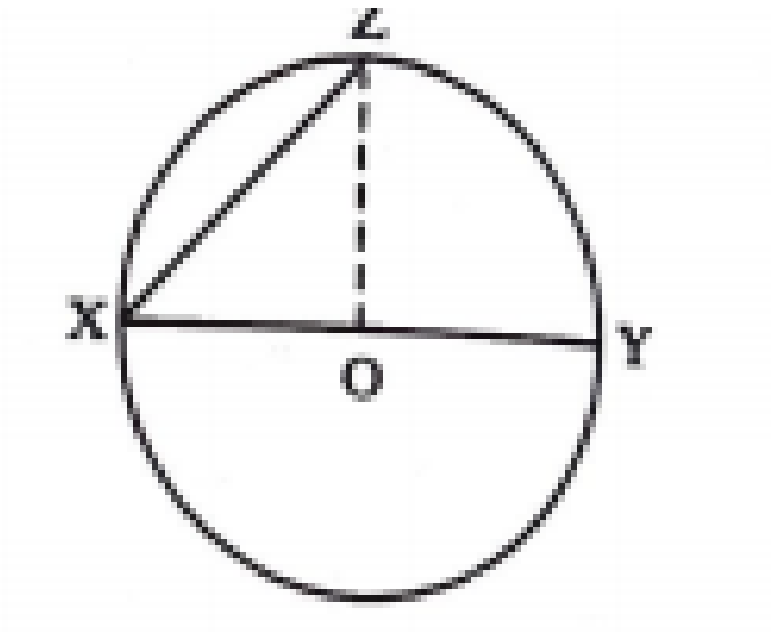
36. In the fig. O is the centre of the circle and XOY is diameter. If XZ is any other chord of the

circle show that XY>XZ



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37. The measure of each angle of an equilateral triangle is :

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38. In two triangles, ABC and ADC, if AB=AD, BC=CD. Are they congruent?

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39. If two congruent triangles ABC and DEF, if AB=DE and BC=EF. Name the pairs of equal angles.

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40. In two triangles ABC and DEF, $\angle A = \angle D, \angle B = \angle E$ and $\angle C = \angle F$ and $AB = 3DE$. Then the two triangles are:

A. 1) Congruent but not similar

B. 2) Similar but not congruent

C. 3) Congruent as well as similar

D. 4) Neither congruent nor similar

Answer:

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41. ABC is an isosceles triangle AB=AC and BD and CE are its two medians. Show that BD=CE.

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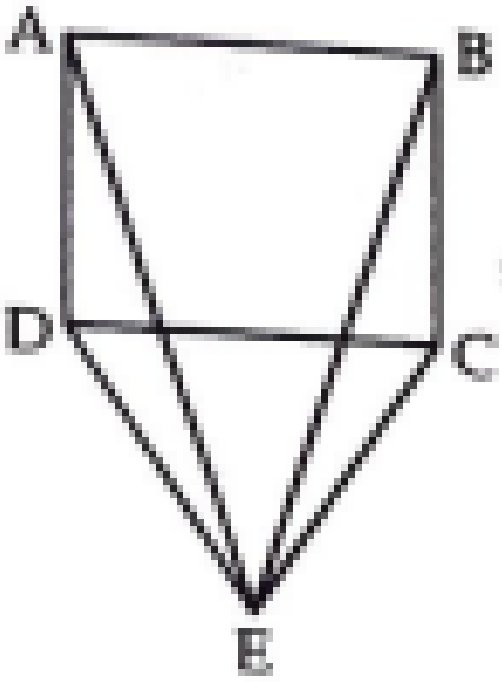
42. CDE is an equilateral triangle formed on a side CD of a square ABCD(see fig.). Show that

$\triangle ADEq \equiv \triangle BCE$



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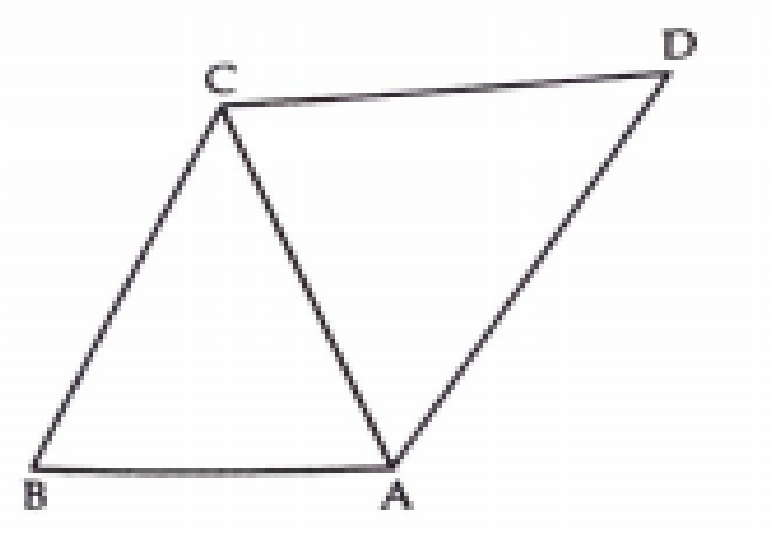
43. In the fig. prove that:

AD+AB+BC+CD>2AC.



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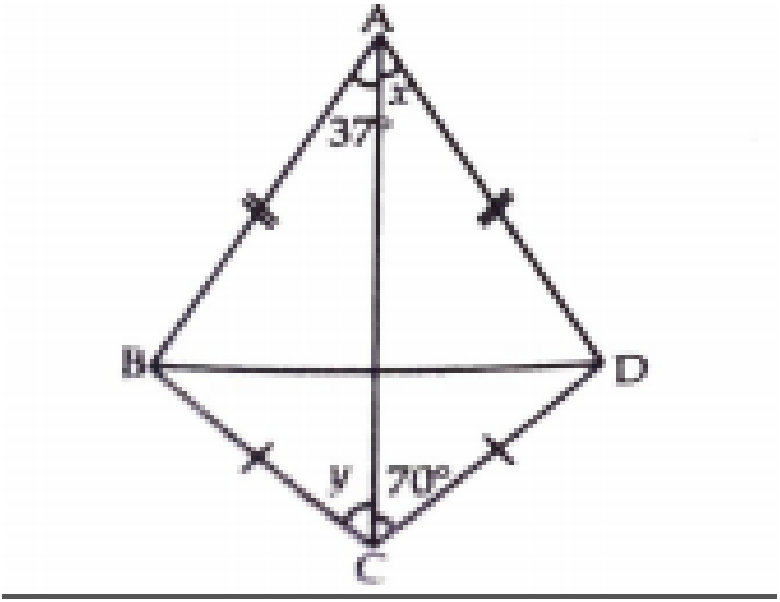
44. In the fig. find x and y



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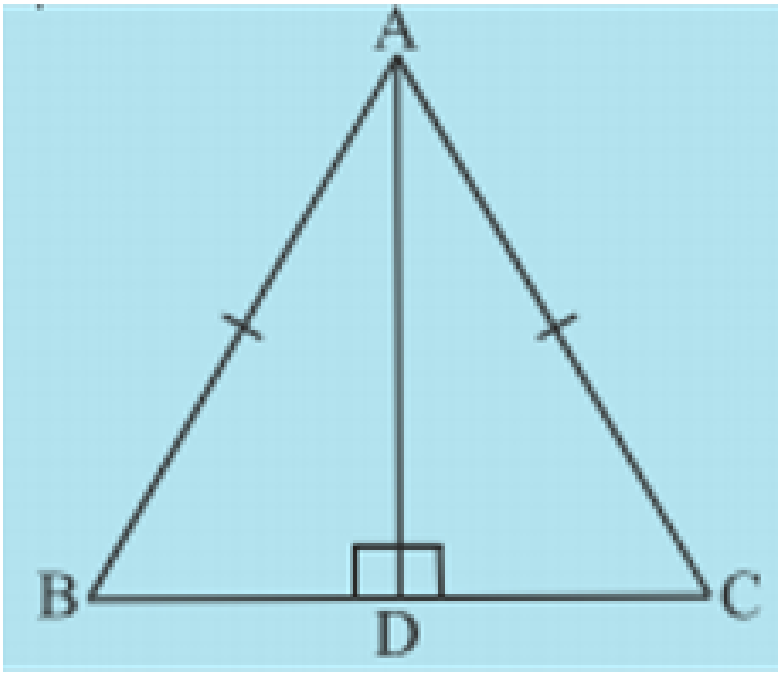
45. ABC is an isosceles triangle with AB = AC and AD is one of its altitudes.



Is $\triangle ADB \cong \triangle ADC$? Why or why not?

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46. In $\triangle ABC$, AB=AC and $\angle A = 100^\circ$, find $\angle B$ and $\angle C$.

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47. Sum of any two sides of a triangle is greater than the third side.

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48. In a triangle, the angle opposite to the longer side is :

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49. The sides opposite to two equal angles of a triangle are :

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50. If altitudes from two vertices of a triangle to the opposite sides are equal prove that the triangle is isosceles.

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51. State True or false

Bisectors of unequal angle of an triangle may be equal.

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52. In $\triangle ABC, A = 46^\circ, B = 74^\circ$ then find angle C

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53. If two right triangles, one side and an acute angle of one triangle are equal to one side and the corresponding angle of other triangle. Prove that the two triangles are congruent.

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54. True or False :ASA is not a Congruent Criteirorn.

Watch Video Solution

55. an equilateral triangle?

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56. By ASA Congruence Criterion, two angls and included side of one triangle are equal to the corresponding angles and included side of other triangles.

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57. Sides opposite to.....angles to a triangle are equal.

Watch Video Solution

58. A $\triangle ABC$ is obtuse angled at point B then the longest side is.....

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59. If in two triangles $\triangle PQR$ and $\triangle DEF$, PR=EF, QR=DE,PQ=FD, then

$\triangle PQR \equiv \ldots\ldots\ldots\ldots\ldots\ldots$ ..

Watch Video Solution

60. In an equilateral triangles all angles are..... .

Watch Video Solution

61. Difference of any two sides of a triangle is equal to the third side.

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62. Show that in a right angled triangle, the hypotenuse is the longest side.

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63. The sum of three altitudes of a triangle is ..... Than its perimeter.

Watch Video Solution

64. In right $\triangle ABC$ and $\triangle DEF$, if hypotenuse AB=EF and side AC=DE, then $\delta ABC \equiv$ .....

Watch Video Solution

65. If in two triangles $\triangle ABC$ and $\triangle PQR$, AB=QR $\angle A = \angle Q$ and $\angle B = \angle R$, then $\triangle ABC \equiv$ . . . . . .

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66. A triangle with sides measuring 6cm, 5 cm and 12 cm is.....to draw.

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67. Which of the following is not a criteria for congruence of triangles?

A. SAS

B. ASA

C. SSA

D. SSS

Answer:

Watch Video Solution

68. If AB=QR, BC=PR and CA=PQ then

A. $\triangle ABC \equiv \triangle PQR$

B. $\triangle CBA \equiv \triangle PRQ$

C. $\triangle BAC \equiv \triangle RPQ$

D. $\triangle PQR \equiv \triangle BCA$

Answer:

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69. In $\triangle ABC$, AB=AC and $\angle B = 50^\circ$. Then the sum of angle C and A is equal to

A. 40°

B. 50°

C. 80°

D. 130°

Answer:

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70. In $\triangle ABC$, BC=AB and $\angle B = 80^\circ$ then $\angle A$ is equal to

A. 80°

B. 40°

C. 50°

D. 100°

Answer:

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71. In $\triangle PQR, \angle R = \angle P$ and QR=4 cm and PR=5cm. Then the length of PQ is

A. 4 cm

B. 5 cm

C. 2 cm

D. 2.5 cm

Answer:

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72. D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$. Show that CA^2 = CB. CD.

A. BD=CD

B. BAgtBD

C. BDgtBA

D. CDgtCA

Answer:

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73. It is given that $\triangle ABC = \triangle FDE$ and AB=5 cm, $\angle B = 40^\circ$ and $\angle A = 80^\circ$. Then which of the following is true?

A. DF=5cm $\angle F = 60^\circ$

B. DF=5 cm, $\angle E = 60^\circ$

C. DE=5cm, $\angle E = 60^\circ$

D. DE=5cm, $\angle D = 40^\circ$

Answer:

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74. Two sides of a triangle are of lenghts 5 cm and 1.5 cm. the length of the third side of the cannot be

A. 3.6 cm

B. 4.1 cm

C. 8.8 cm

D. 3.4 cm

Answer:

Watch Video Solution

75. In ΔPQR, If $\angle R > \angle Q$, then :

A. QRgtRP

B. PQgtPR

C. PQltPR

D. QRltPR

Answer:

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76. In ΔABC and PQR, AB = AC, $\angle C = \angle P$ and $\angle B = \angle Q$. The two triangles are :

A. isosceles but not congruent

B. isosceles and congruent

C. congruent bu tnot isosceles

D. neither congruent nor isosceles.

Answer:

Watch Video Solution

77. In triangles ABC and DEF, AB=FD, $\angle A = \angle D$. The two triangles will become congurent by SAS axiom if

A. BC=EF

B. AC=De

C. AC=EF

D. BC=DE

Answer:

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78. Which is true?

A. A triangle can have two right angles

B. A trianlge can have two acute angles

C. A triangle can have two obtuse angles

D. An exterioe angle of a triangle is less than either of the interior opposite angles.

Answer:

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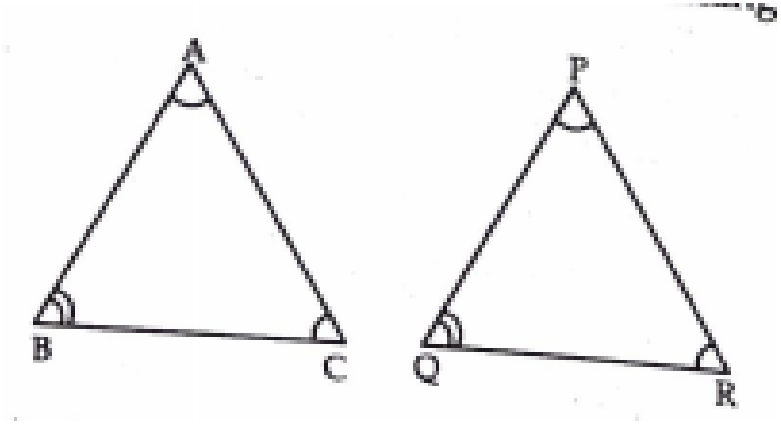
79. In $\triangle sABC$ and $\triangle PQR$, it is given that AB=AC, $\angle C = \angle P$ and $\angle B = \angle Q$. Then the two triangles are



A. isosceles bu tnot congruent

B. neither congruent nor isosceles

C. isosceles and congruent

D. congruent but not isosceles.

Answer:

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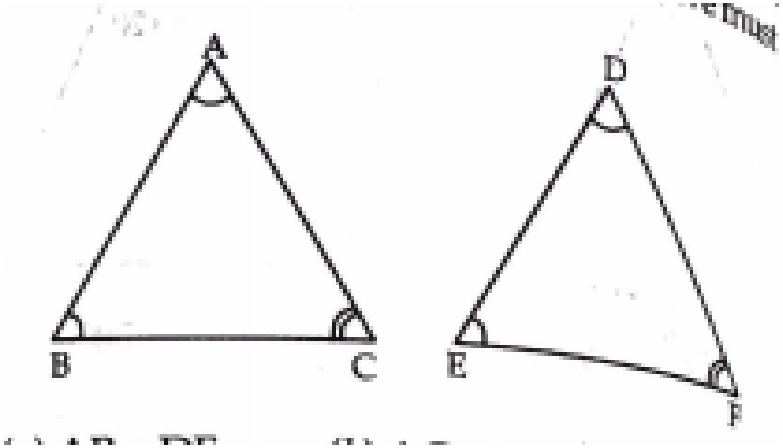
80. In $\triangle ABC$ and $\triangle DEF$, it is given that $\angle B = \angle E$ and $\angle C = \angle F$. In order that

$\triangle ABC \equiv \triangle DEF$. We must have



A. AB=DF

B. AC=DE

C. BC=EF

D. $\angle A = \angle D$

Answer:

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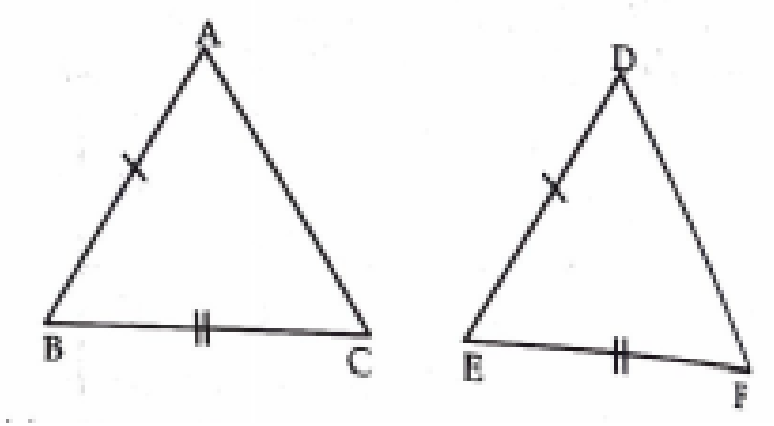
81. In $\triangle ABC$ and $\triangle DEf$, it is given that AB=DE and BC=EF in order that $\triangle ABC \equiv trian \leq DEF$, we must have to



A. $\angle A = \angle D$

B. $\angle C = \angle F$

C. $\angle B = \angle E$

D. none of these

Answer:

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82. If $\triangle ABC \equiv \triangle LKM$, then which side of $\triangle LKM$ equal to sides of AC of $\triangle ABC$ is

A. LK

B. LM

C. KM

D. none of these

Answer:

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83. If $\triangle ABC$ and PQR if $\angle A = \angle R$, $\angle B$ and $\angle P$ and AB=RP, then which one of the following congruence conditions applies

A. SAS

B. SSS

C. ASA

D. RHS

Answer:

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84. In $\triangle PQR \equiv \triangle EFD$, then $\angle E =$

A. $\angle P$

B. $\angle R$

C. $\angle Q$

D. None of these

Answer:

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85. In an isosceles triangle, if the vertex angle is equal to the sum of the base angles, then the measure vertex angles of the triangles is

A. 100°

B. 110°

C. 120°

D. 130°

Answer:

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86. Which of the following is not true

A. SAS

B. ASA

C. SSA

D. SSS

Answer:

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87. In $\triangle ABC$, AB=AC and $\angle A = 100^\circ$, find $\angle B$ and $\angle C$.

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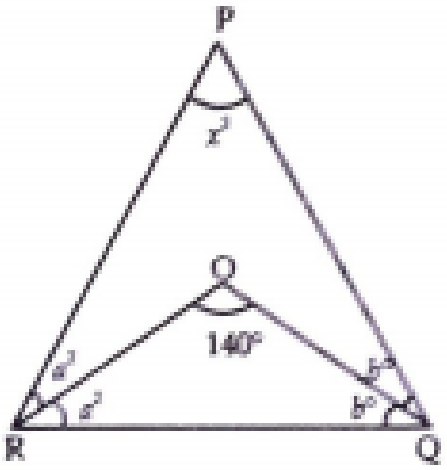
88. In $\triangle PQR$ what is the value of x



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89. O is any point in the interior of $\triangle ABC$ such that OB=OC and AB=AC. Show that AO

bisects $\angle A$.

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90. In $\triangle ABC, \angle B = 35^\circ, \angle C = 65^\circ$ and the bisector of $\angle BAC$ meets in X. arrange AX,BX and CX in descending order.

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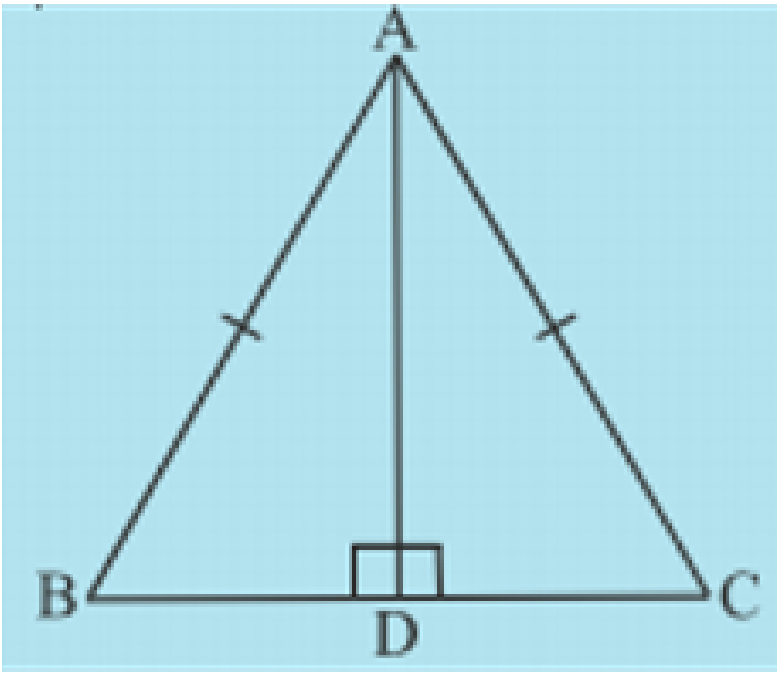
91. ABC is an isosceles triangle with AB = AC and AD is one of its altitudes.



Is BD = CD? Why or why not?

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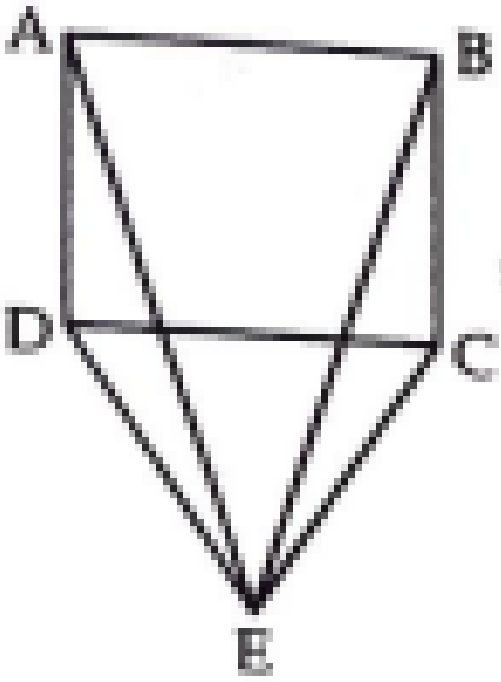
92. CDE is an equilateral triangle formed on a side CD of a square ABCD(see fig.). Show that

$\triangle ADEq \equiv \triangle BCE$



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93. CDE is an equilateral triangle formed on a side CD of a square ABCD(see fig.). Show that

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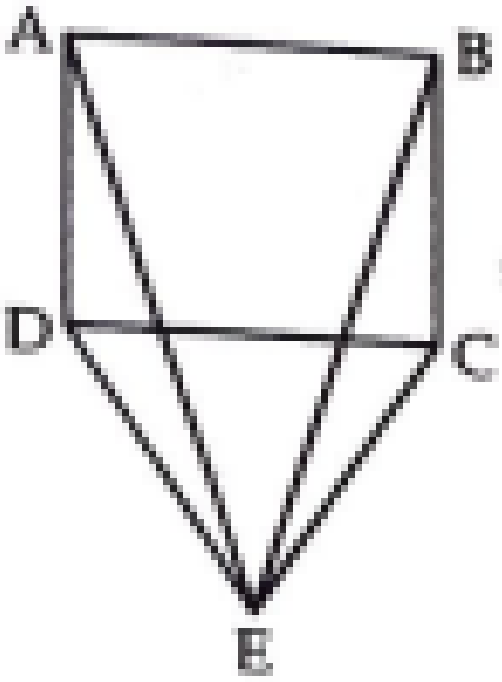

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94. D is any point on side AC of $\triangle ABC$ with AB=AC show that CD>BD.

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95. Bisectors of angles B and C of an isoscels triangles ABC with AB=AC intersects each other at O. prove that external angle adjacent to $\angle ABC$ is equal to $\angle BOC$.

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96. ABC is a right angled with AB=AC. Bisector of $\angle A$ meets BC at D. prove that BC=2AD

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97. O is a point in the interior of a square ABCD such that OAB is an equilateral triangle. Show that $\triangle OCD$ is an isosceles triangle.

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98. In a triangle ABC, D is the mid point of side AC such that $BD = \frac{1}{2}AC$. Show that $\angle ABC$ is a right angle.

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