MATHS

BOOKS - R G PUBLICATION

TRIANGLES

Example

1. In $\triangle ABC$ two points L and M are taken in the sides AB and AC such that $LM \| BC$ and BL=x-3,AB=2x,CM=x-2,AC=2x+3 then find the value of x.

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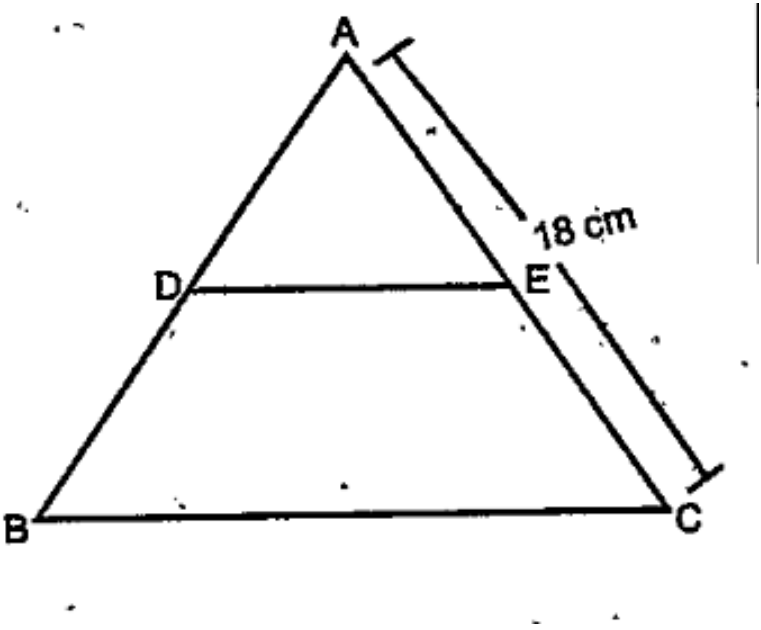
2. In the given figure $DE \mid\mid BC$,If $\frac{AD}{DB} = \frac{2}{3}$and AC=18 cm.then find AE.



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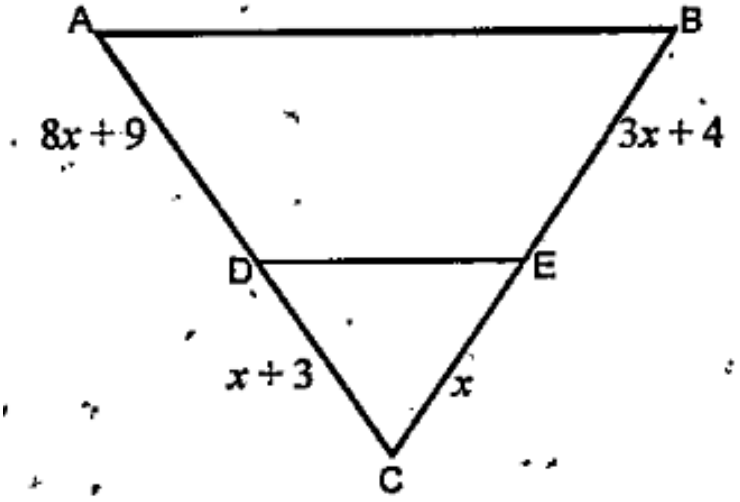
3. In the given figure for what value of x will be `DE|\|AB?



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4. In $\triangle ABC$D and E are respectively two points on the side AB and AC.AB=12 cm,AD=8 cm,AE=12 cm and AC=18 cm then show that $DE \| \| BC.$

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5. D and E are respectively the point on the sides AB and AC of a trinagle ABC such that $DE \| BC$. Through the point E a line parallel to CD is drawn which cut AB at the point F then show that $AD^2 = AB \times AF$

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6. ABC is an isosceles triangle with AB = AC and D is a point on AC such that $BC^2 = AC \times CD$. Prove that BD = BC

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7. If $\triangle ABC$ is similar to $\triangle DEF$ such that BC = 4 cm, EF = 5 cm and area of $\triangle ABC = 64cm^2$. Determine the area of $\triangle DEF$

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8. In $\triangle ABC$ if $AD \perp BC$ and $AD^2 = BD \times DC$ then prove that, $\angle BAC = 90^\circ$

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9. D and E are two points on the sides AC and AB respectively of $\triangle ABC$ such that $\triangle ADE \sim \triangle ABC$. If AD=1.9cm, AE=3.6cm. BE=2.1cm. and BC=8.4 cm. find DE.

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

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11. If BD and CE are two altitudes of $\triangle ABC$,prove that $\frac{CA}{AB} = \frac{CE}{DB}$

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12. $\triangle BAC$ and $\triangle BDC$ are two right-triangle on the same side of the base BC.If AC ans DB intersect each other at a point P,show that $AP \times PC = DP \times PB$.

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13. If BD is the perpendicular drawn from the vertex B of the right triangle ABC to the hypotenuse AC,prove that(i) $BD^2 = AD \times DC$

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14. If BD is the perpendicular drawn from the vertex B of the right triangle ABC to the hypotenuse AC,prove that(ii) $AB^2 = AD \times AC$

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15. If BD is the perpendicular drawn from the vertex B of the right triangle ABC to the hypotenuse AC,prove that(iii) $BC^2 = CD \times AC$

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16. ABC is an isosceles triangle with AB = AC and D is a point on AC such that $BC^2 = AC \times CD$. Prove that BD = BC

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17. If AD is the altitudè of $\triangle ABC$ and $\frac{BD}{DA} = \frac{DA}{DC}$ prove that $\triangle ABC$ is right-angled

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18. D and E are respectively two points on the sides AB and AC of $\triangle ABC$ such that $DE \| BC$.If (AD)/(DB)=2/3 find (BC)/(DE)

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19. Of the trapezium ABCD, $AB \| DC$ and DC = 2AB. If the line segment EF drawn parallel to AB meets AD and BC at the points Fand E respectively so that (BE)/(EC)=3/4 and the diagonal DB meets EF at the points G, prove that 7FE=11AB

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20. AB and EF are two parallel line segments and D is the point of intersection of BE and AF. C is a point on AE such that $CD \| AB$. If AB = 6 cm., EF = 10cm .,BD = 4 cm.,find the lengths of CD and DE.

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21. Prove that in two equiangular triangles the ratio of the corresponding sides and the ratio of the bisectors of the corresponding angles are equal. [The end-points of the bisectors are on the opposite sides of the angles.]

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22. Prove that in two similar triangles the ratio of corresponding sides is equal to the ratio of the corresponding altitudes.

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23. If two sides and the median drawn to one of these two sides of a trlangle are proportional to the corresponding sides and median of another triangle,prove that the two triangles are similar.

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24. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of the corresponding altitudes of the triangles.

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25. Prove that the ratio of the areas of two similar triangle is equal to the square of the ratio of their corresponding medians.

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26. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of the bisectors of the corresponding angles of the triangles. [The end-points of the angular bisectors are on the opposite sides of the angles.]

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27. Prove that the area of an equilateral triangle with sides equal to the sides of a square is half the area of the equilateral triangle with sides equal to ṭhe length of the diagonals of the square.

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28. Find the length of the hypotenuse of the triangles whose other two sides are:(i)6cm ,8 cm

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29. Find the length of the hypotenuse of the triangles whose other two sides are:(ii)24 cm ,7 cm

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30. Find the length of the hypotenuse of the triangles whose other two sides are:(iii)5 cm ,12 cm

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31. In the $\triangle ABC, AB = p^2 - q^2, BC = p^2 + q^2$ and CA=2pq then prove that $\triangle ABC$is right angled.Which of the angles of the triangle is right angle?

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32. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squarea of its diagonals.

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33. Prove that the sum of the squares drawn on the sides of a square is equal to the sum of the squares drawn on its diagonals.

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34. If one side of an equilateral triangle measures 5 cm,then find the measure of its altitude.

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35. The sides of a triangle measure 13 cm,12 cm,and 5 cm.prove that the triangle is right angled.

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36. Of the right triangle ABC, $AB = a + b, BC = 2\sqrt{ab}$ and $\angle c = 90^\circ$ .Find AC.

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37. Of the right triangle PQR PQ = ax - by, QR = bx + ay and $\angle Q$ =Right angle then find PR

A. Q = one-right

B.

C.

D.

Answer:

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38. A man walked 7 km. to the north and then turning to the east , walked 3 km.Finally he turned to the south and walked 3 km.Find the minimum distance between the starting point and the finishing point of his journey.

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39. $\angle Qof \triangle PQR$ is a right angle.If PQ=4 cm,QR=3cm,then find the length of the median drawn from Q to PR.

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40. The length of the hypotense of an isosecles right, triangle is $4\sqrt{2}$.Find the length of its side.

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41. If the length of the diagonals of a rhombusare 10 cm and 24 cm. then find the length of its sides.

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42. If the length of one side of an equilateral triangle is 10 cm. then find the length of its altitude.

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43. If the length of the diagonals of a rhombus are 18 cm and 24cm. then find the length of sides.

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44. If the length of one of the diagonals of a rhombus is 24 cm. and the length of one of its sides is 15 cm.find the length of the other diagonal.

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45. If $\angle C$ of the isosceles triangle ABC is measure 90°, then prove that $AB^2 = 2AC^2$.

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46. If PS is the altitude on the base QR $\triangle PQR$, then prove that $PQ^2 + SR^2 = PR^2 + QS^2$

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47. If ABCD is a square, then show that $AC^2 = 2AB^2$

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48. The sides of the quadrilateral ABCD are not equal to one another and $AC \perp BD$ prove that $AB^2 + CD^2 = AD^2 + BC^2$

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49. P is any point inside the rectangle ABCD. Prove that $AP^2 + CP^2 = BP^2 + DP^2$

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50. Prove that the area of the equilateral triangle drawn on the hypotenuse of a right angle triangle is equal to the sum of the areas of the equilateral triangles drawn on the other two sides.

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51. AD is the perpendicular from A and BC of $\triangle ABC$.If AB=c,BC=a,CA=b and AD=x then prove that $a = \sqrt{b^2 - x^2} + \sqrt{c^2 - x^2}$

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52. Of triangle ABC,$\angle B = 90^\circ$ and $BD \perp AC$.IF AB=c,BC=a,CA=b and BD=p then prove that ,$\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{c^2}$.

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53. The square of the length of the hypotenuse of an isosceles right triangle is $32cm^2$.Find the length of the other two sides.

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54. If one diagonal of a square measures $12\sqrt{2}$cm. find the length of its side.

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55. If one side of an equilateral triangle measures 10cm. find its height.

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56. The perimeter of two similar triangles are respectively 25cm. and 15 cm. If one side of the first triangle is 9 cm.,find the corresponding side of the second triangle.

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57. In triangle ABC,D and E are points on the sides AB and AC such that $\angle AED = \angle C$. Prove that $\triangle ADE \sim \triangle ABC$

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58. $\triangle BAC$ and $\triangle BDC$ are two right-triangle on the same side of the base BC.If AC ans DB intersect each other at a point P,show that $AP \times PC = DP \times PB$.

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59. M is the mid point of the side CD of the parallelogram ABCD. The line BM is drawn intersecting AC in L and AD produced Prove that (i)$AL \times LM = CL \times BL$

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60. M is the mid point of the side CD of the parallelogram ABCD. The line BM is drawn intersecting AC in L and AD produced at E.Prove that(ii) EL = 2BL

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61. In trapezium ABCD ,$AB \| DC$ and AC and BD diagonal intersect at the point E. Prove that (EA)/(EC)=(EB)/(ED).

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62. The bisector of $\angle C$ and $\angle G$of two similar triangle ABC and EFG are meet the side AB and EF respectively at the point D and H.Prove that $\triangle DCA \sim \triangle HGE$

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63. In the right triangleACB,$\angle C = 90^\circ$ and $CD \perp AB$.Prove that,$\frac{BC^2}{AC^2} = \frac{BD}{AD}$

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64. $PA \perp AC$ and $RC \perp AC$such that PA=x and RC = z .If PC and AR are intersect at thepoint Q , perpendicular distance from AC is y then prove that 1/x+1/z=1/y.

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65. If two triangles are equiangular then prove that the ratio of the corresponding sides is (i)Same as the ratio of the corresponding sides.

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66. Prove that in two equiangular triangles the ratio of the corresponding sides and the ratio of the bisectors of the

corresponding angles are equal. [The end-points of the bisectors are on the opposite sides of the angles.]

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67. If two triangles are equiangular then prove that the ratio of the corresponding sides is (iii)Same as the ratio of the corresponding altitude.

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68. If one angle of a triangle is equal to one angle of another triangle and the bisectors of these equal angles divide the opposite side in the same ratio then show that the triangle are similar.

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Exercise

1. All circles are _____ . (congruent, similar)

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2. All squares are __-. (Similar, congruent)

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3. All___ triangles are similar. (isosceles, equilateral)

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4. Two polygons of the same number of sides are similar, if(a) their corresponding angles are ___

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5. Two polygons of the same number of sides are similar, if(b) their corresponding sides are__(equal ,proportional)

A. (eqiial

B.

C.

D.

Answer:

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6. Give two different examples of pair of(i) similar figures

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7. Give two different examples of pair of((ii) non-similar figures

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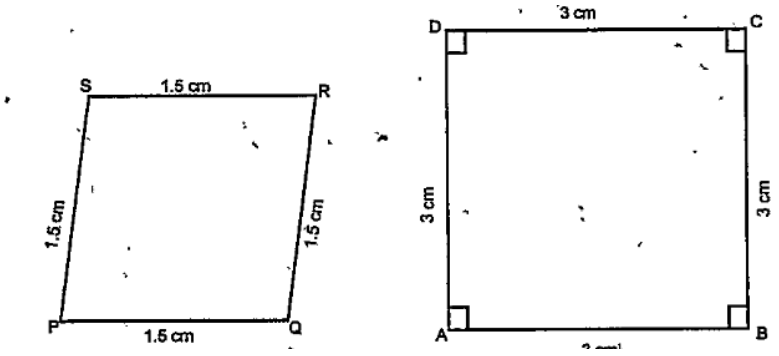
8. State whether following quadrilaterals are similar or not:



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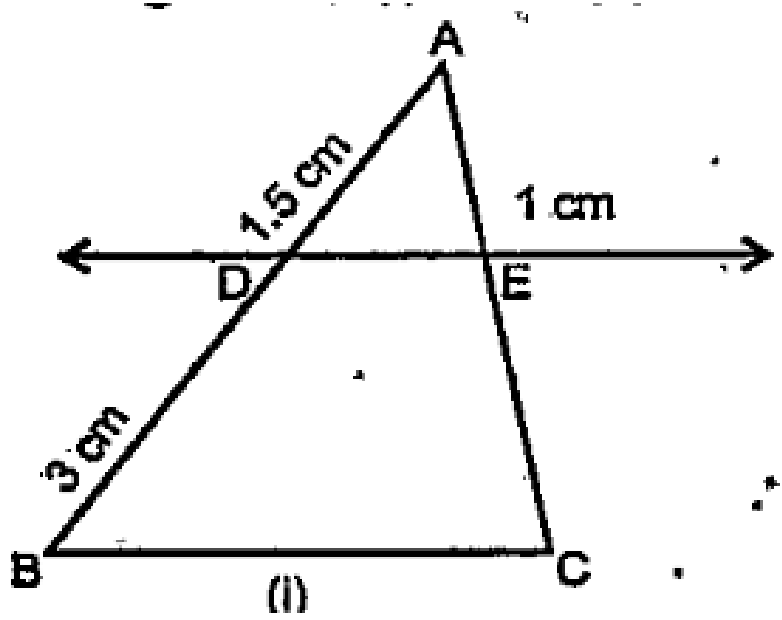
9. In fig(i) ,$DE \| BC$.Find EC in (i).



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10. E and F are points on the sides PQ and PR respectively of a $\triangle PQR$.For each of the following cases, state whether $EF \| QR$:(i)PE = 3.9 cm,EQ = 3 cm,PF= 3.6 cm and FR = 2.4 cm

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11. E and F are points on the sides PQ and PR respectively of a $\triangle PQR$.For each of the following cases, state whether $EF \| QR$:(ii) PE = 4 cm, QE =4.5 cm, PF = 8 cm and RF = 9 cm

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12. E and F are points on the sides PQ and PR respectively of a $\triangle PQR$.For each of the following cases, state whether $EF \| QR$:(iii)PQ =1.28 cm, PR = 2.56 cm, PE = 0.18 cm and PF = 0.36 cm

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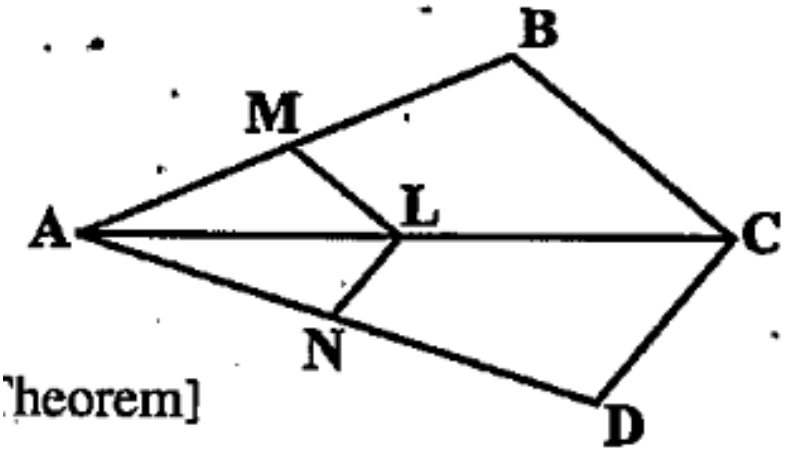
13. In Fig. , if $LM \| CB$ and $LN \| CD$,prove that $\frac{AM}{AB} = \frac{AN}{AD}$



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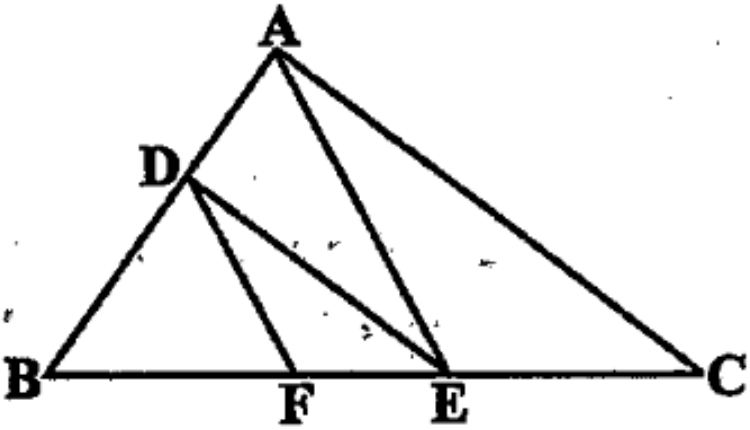
14. In Fig. $DE||AC$ and $DF||AE$.Prove that $\frac{BF}{FE} = \frac{BE}{EC}$



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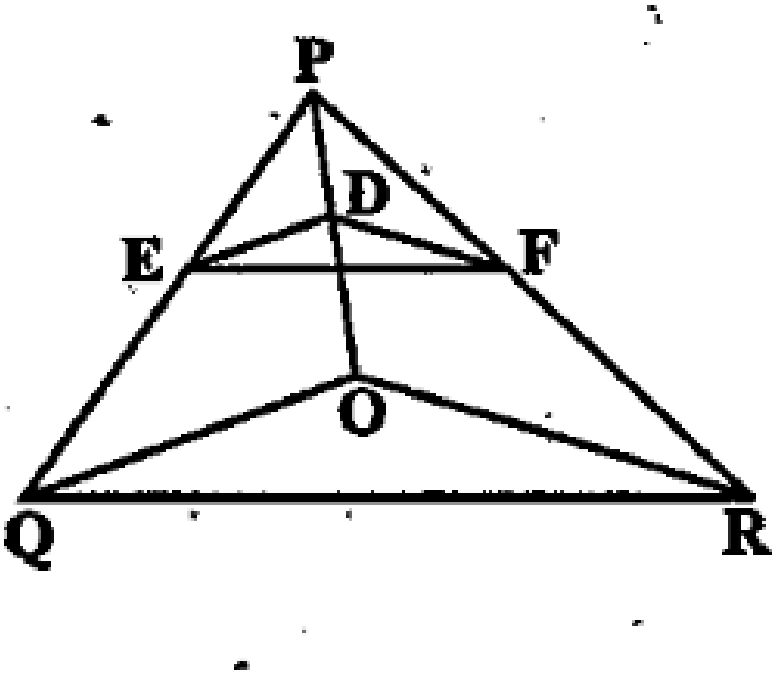
15. In Fig. 6.20, $DE||OQ$ and $DF||OR$.Show that $EF \mid \mid QR$.



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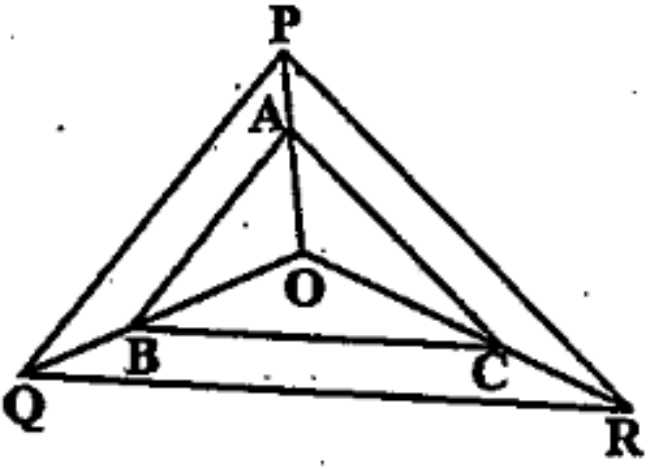
16. In Fig., A, B and C are points on OP, OQ and OR respectively such that $AB||PQ$ and $AC||PR$.Show that $BC \mid \mid QR$.



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17. Using Theorem 6.1, prove that a line drawn through the mid-point of one side of a triangle parallel to another side bisects the third side.. (Recall that you have proved it in class IX).

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18. Using Theorem 6.2, prove that the line joining the mid-points of any two sides of a triangle is parallel to the third side. (Recall that you have done it in class IX).

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19. ABCD is a trapezium in which $AB \| DC$ and its diagonals intersect each other at the point O.Show that $\frac{AO}{BO} = \frac{CO}{DO}$

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20. The diagonals of a quadrilateral ABCD intersect each other at the point O such that (AO)/(BO)=(CO)/(DO)`. Show that ABCD is a trapezium.

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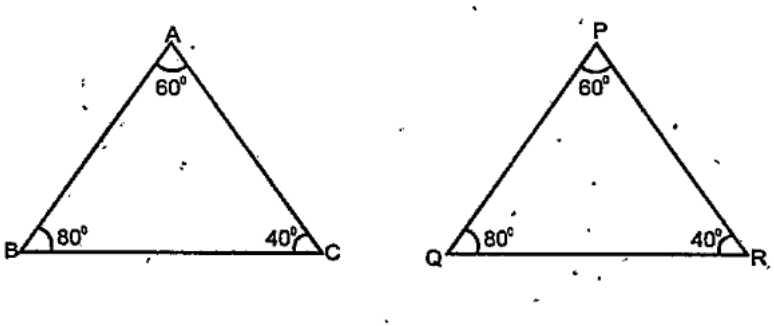
21. State which pairs of triangles in Fig. are similar. Write the similarity criterion used by you for answering the question and also write the pairs of similar triangles in the symbolic form:



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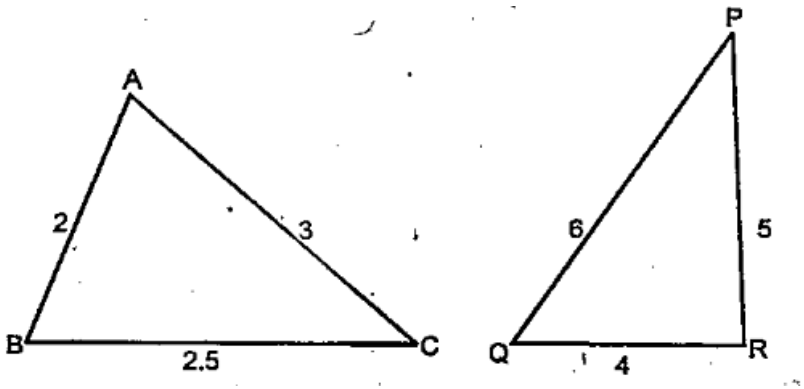

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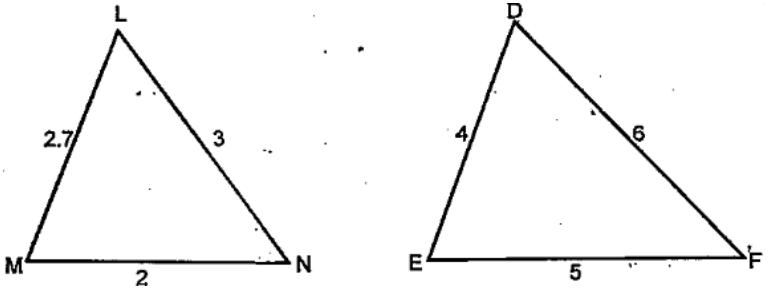

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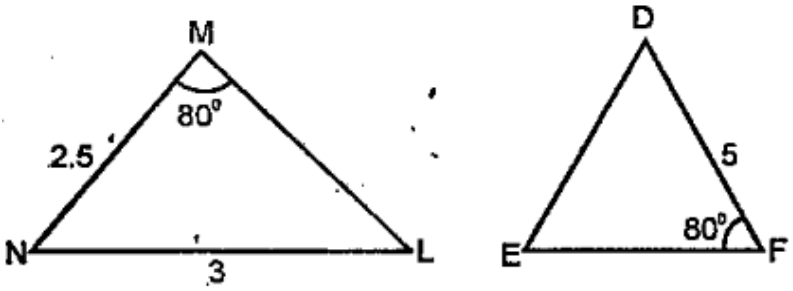

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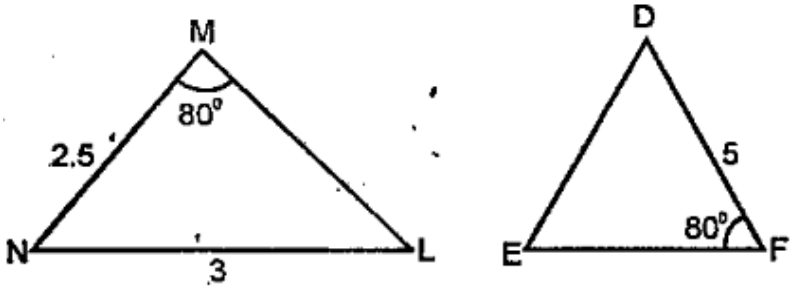
25. State which pairs of triangles in Fig.are similar. Write the similarity criterion used by you for answering the question and

also write the pairs of similar triangles in the symbolic form:



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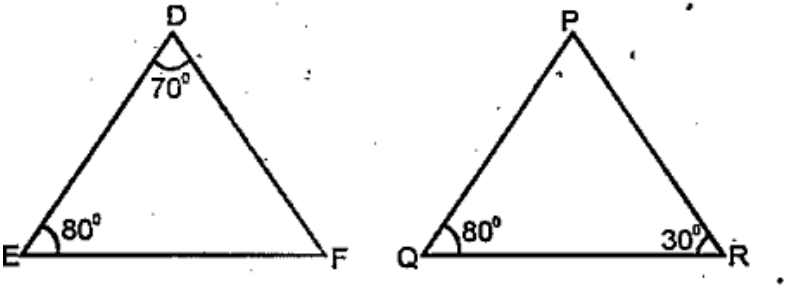
26. State which pairs of triangles in are similar. Write the similarity criterion used by you for answering the question and also write the pairs of similar triangles in the symbolic form:



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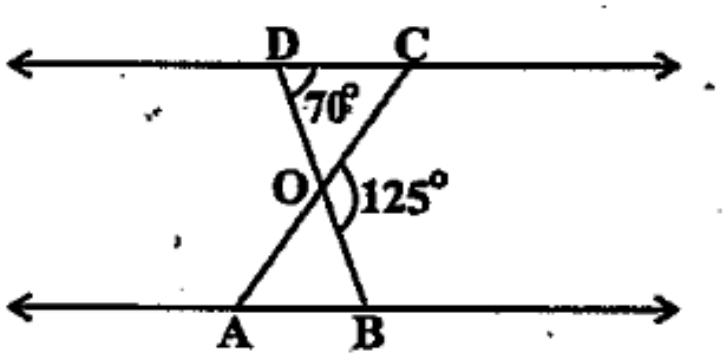
27. In Fig. 6.35, $\triangle ODC \sim \triangle OBA, \angle BOC = 125^\circ$ and $\angle CDO = 70^\circ$ Find $\angle DOC, \angle DCO,$ and $\angle OAB.$



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28. Diagonals AC and BD of a trapezium ABCD with $AB \| DC$ intersect each other at the point O.Using a similarity ciiterion for two triangles, show that $\frac{OA}{OC} = \frac{OB}{OD}$.

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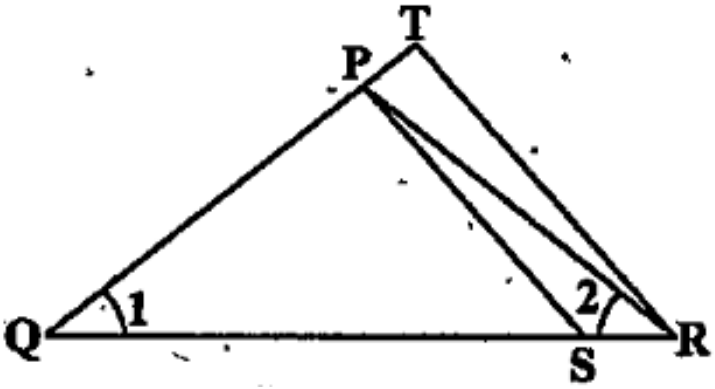
29. In Fig. 6.36, $\frac{QR}{QS} = \frac{QT}{PR}$ and $\angle 1 = \angle 2$.Show that $\triangle PQS \sim \triangle TQR$



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30. S and T are points on sides PR and QR of $\triangle PQR$ such that $\angle P = \angle RTS$.Show that $\triangle RPQ \sim \triangle RTS$

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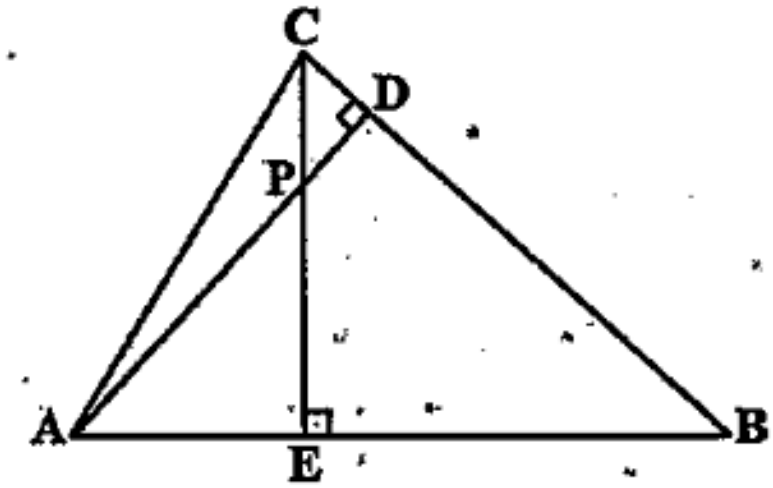
31. In Fig.6.38,altitudes AD and CE of $\triangle ABC$intersect each other at the point P.Show that:



(i)

$\triangle AEP \sim \triangle CDP$

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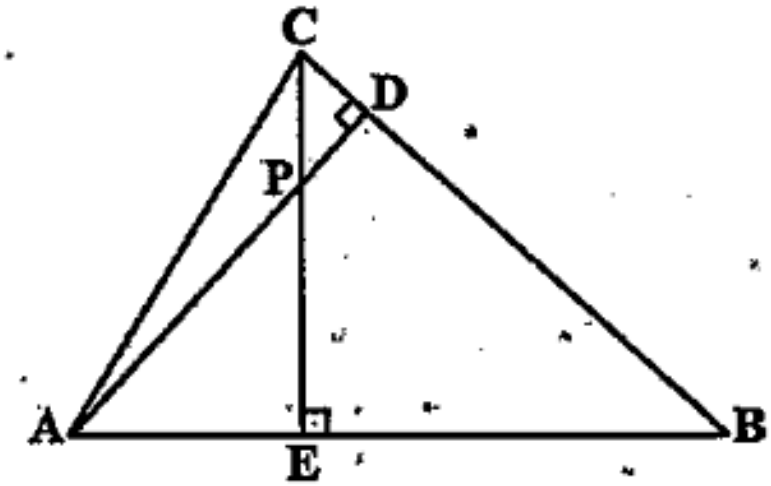
32. In Fig.6.38,altitudes AD and CE of $\triangle ABC$intersect each other at the point P.Show that:



(ii)

$\triangle ABD \sim \triangle CBE$

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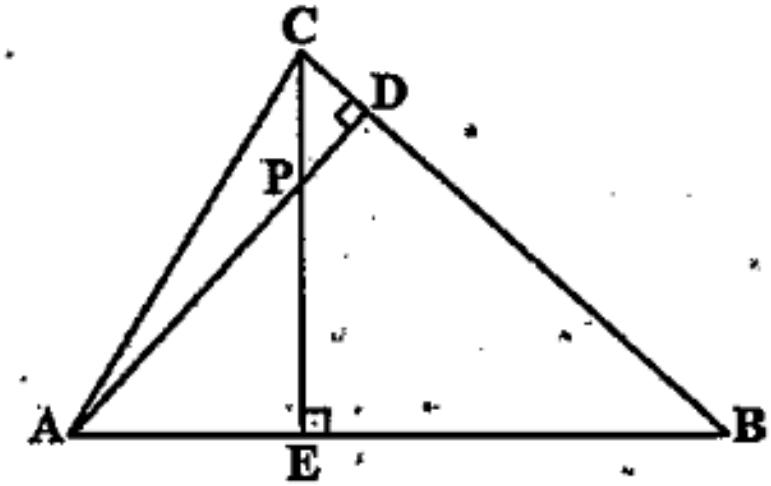
33. In Fig.6.38,altitudes AD and CE of $\triangle ABC$intersect each other at the point P.Show that:



(iii)

$\triangle AEP \sim \triangle ADB$

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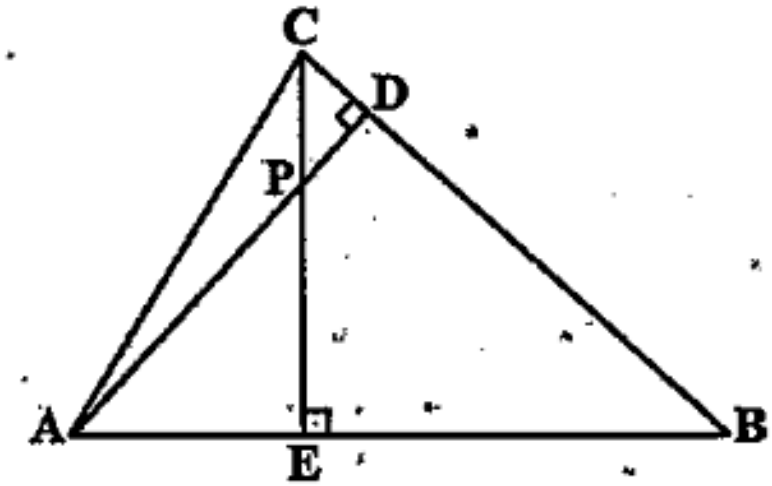
34. In Fig.6.38,altitudes AD and CE of $\triangle ABC$intersect each other at the point P.Show that:



(iv)

$\triangle PDC \sim \triangle BEC$

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35. E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F. Show that $\triangle ABE \sim \triangle CFB$.

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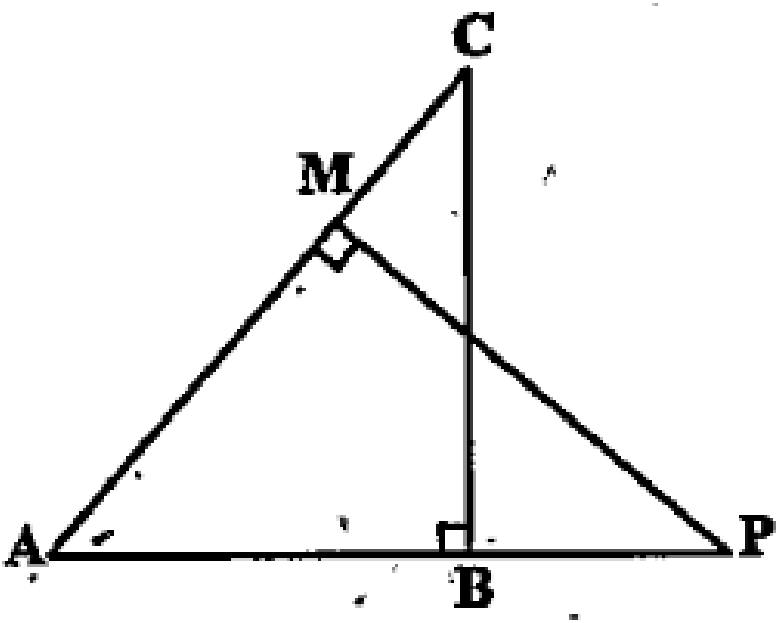
36. If Fig. 6.3 ,ABC and AMP are two right triangles right angled at B and M respectively.Prove that :(i) $\triangle ABC \sim \triangle AMP$



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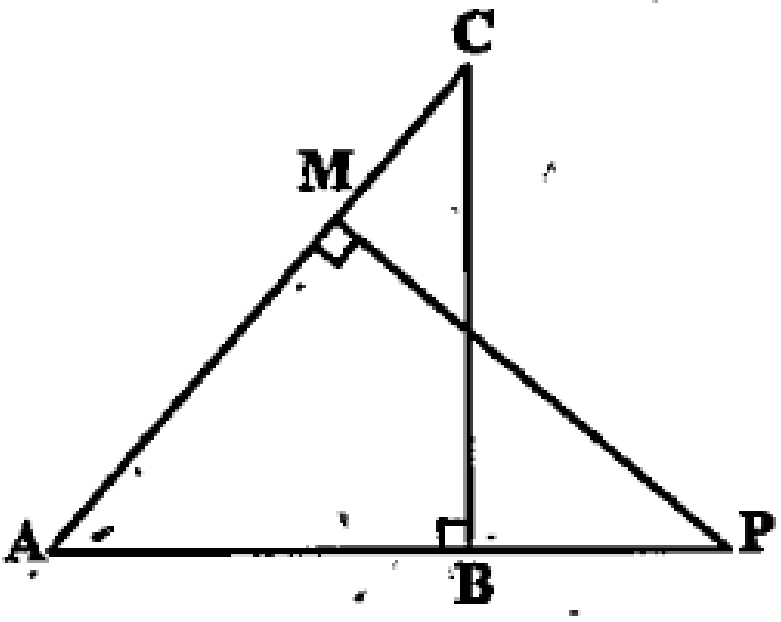
37. If Fig. 6.3 ,ABC and AMP are two right triangles right angled at B and M respectively.Prove that :



(ii)

$$\frac{CA}{PA} = \frac{BC}{MP}$$

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38. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of $\triangle ABC$ and $\triangle FEG$ respectively. If $\triangle ABC \sim \triangle FEG$. show that:(i) $\frac{CD}{GH} = \frac{AC}{FG}$

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39. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of $\triangle ABC$ and $\triangle FEG$ respectively. If $\triangle ABC \sim \triangle FEG$. show that:(ii) $\triangle DCB \sim \triangle HGE$

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40. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of $\triangle ABC$ and $\triangle FEG$ respectively. If $\triangle ABC \sim \triangle FEG$. show that:(iii) $\triangle DCA \sim \triangle HGF$

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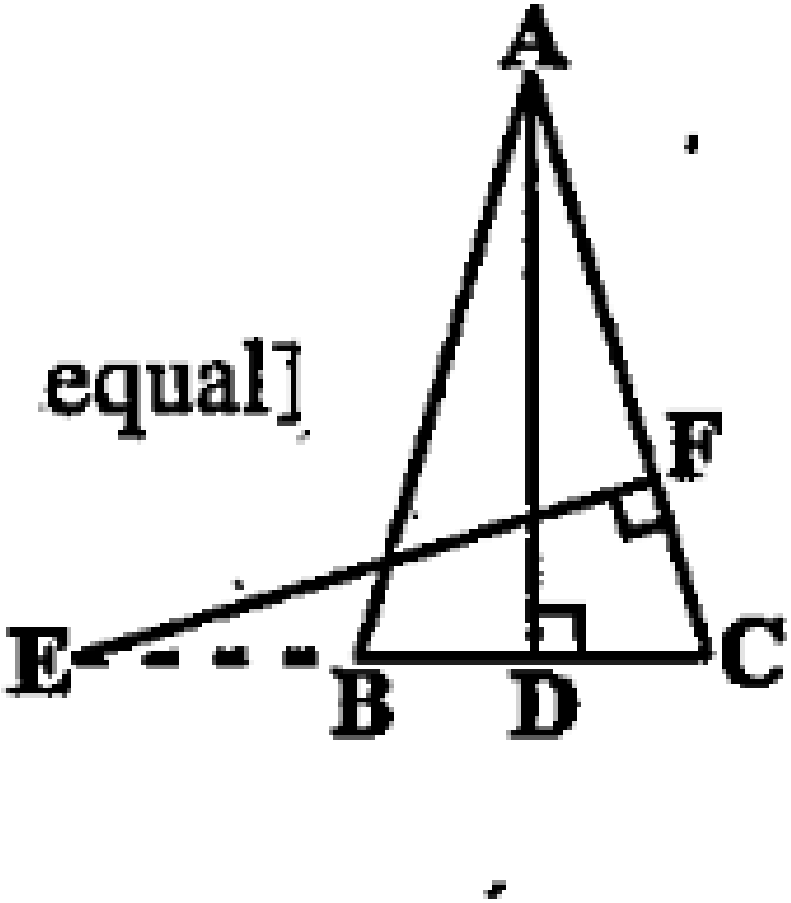
41. In FIg. 6.40, E is a point on side CB produced of an isosceles triangle ABC with AB=AC. If $AD \perp BC$ and $EF \perp AC$, prove that

$\triangle ABD \sim \triangle ECF.$



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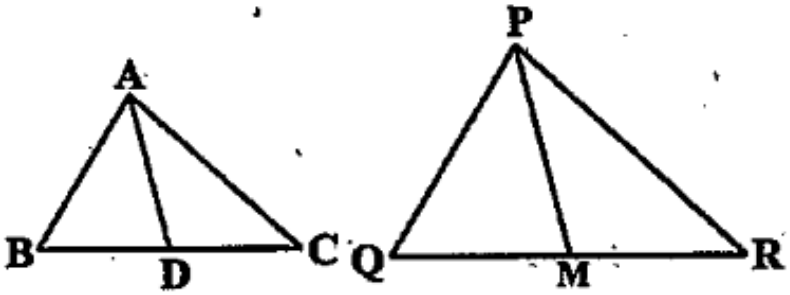
42. Sides AB and BC and median AD of a triangle ABC are respeetively proportional to sides PQ and QR and median PM of

$\triangle PQR$(see Fig. 6.41). Show that $\triangle ABC \sim \triangle PQR$.



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

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44. Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of

another triangle PQR.Show that $\triangle ABC \sim \triangle PQR$.

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45. A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long.Find the height of the tower.

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46. If AD and PM are medians of triangles ABC and PQR,respectively where $\triangle ABC \sim \triangle PQR$,prove that $\frac{AB}{PQ} = \frac{AD}{PM}$.

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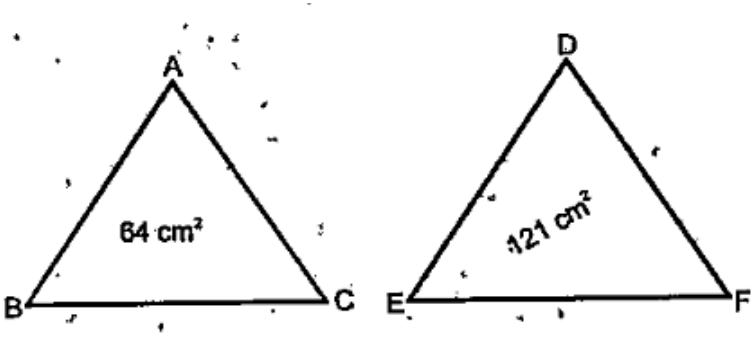
47. Let $\triangle ABC \sim \triangle DEF$ and their areas be,respectively, $64cm^2$ and $121cm^2$.If EF=15.4 cm,find bc.



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48. Diagonals of a trapezium ABCD with $AB \| DC$ intersect each other at the point O.If AB=2 CD,find the ratio of the areas of triangle AOB and COD.

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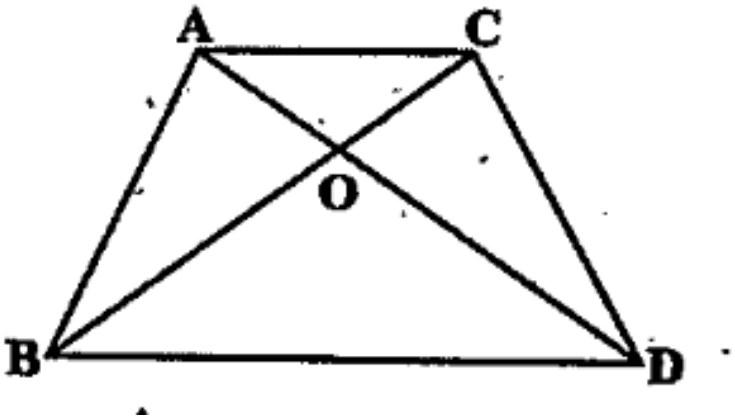
49. If Fig.6.44 ABC and DBC are two triangles on the same base BC.If AD intersects BC atb O,show that $\frac{ar(ABC)}{ar(DBC)} = \frac{AO}{DO}$



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50. If the areas of a similar triangle are equal,prove that they are congruent.

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51. D,E and F are respectively the mid-points of sides AB,BC and CA of $\triangle ABC$.Find the ratio of the areas of $\triangle DEF$ and $\triangle ABC$.

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52. Prove that the ratio of the areas of two similar triangle is equal to the square of the ratio of their corresponding medians.

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53. Prove that the area of an equilateral triangle described on one side of a square is equal to half the area of the equilateral triangle described on one of its diagonals.

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54. ABC and BDE are two equilateral triangles such that D is the mid-point of BC.Ratio of the areas of triangle ABC and BDE is

a)$2:1$ b)$1:2$ c)$4:1$ d)$1:4$

A. $2:1$

B. $1:2$

C. $4:1$

D. $1:4$

Answer:

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55. Sides of two similar triangle are in the ratio 4:9.Areas of these triangle are in the ratio

a)$2:3$ b)$4:9$ c)$81:16$ d)$16:81$

A. $2:3$

B. $4:9$

C. $81:16$

D. $16:81$

Answer:

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56. Sides of triangle are given below.Determine which of them are right triangles.In case of a right triangle,write the length of its hypotenuse.(i)7 cm,24 cm,25cm

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57. Sides of triangle are given below.Determine which of them are right triangles.In case of a right triangle,write the length of its hypotenuse.((ii)3 cm,5 cm,6 cm

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58. Sides of triangle are given below.Determine which of them are right triangles.In case of a right triangle,write the length of its hypotenuse.((iii)50cm,80 cm,100 cm

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59. Sides of triangle are given below.Determine which of them are right triangles.In case of a right triangle,write the length of its hypotenuse.((iv)13 cm,12 cm,5 cm

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60. PQR is a triangle right angled at P and M is a point on QR such that $PM \perp QR$.Show that $PM^2 = QM.\ MR.$

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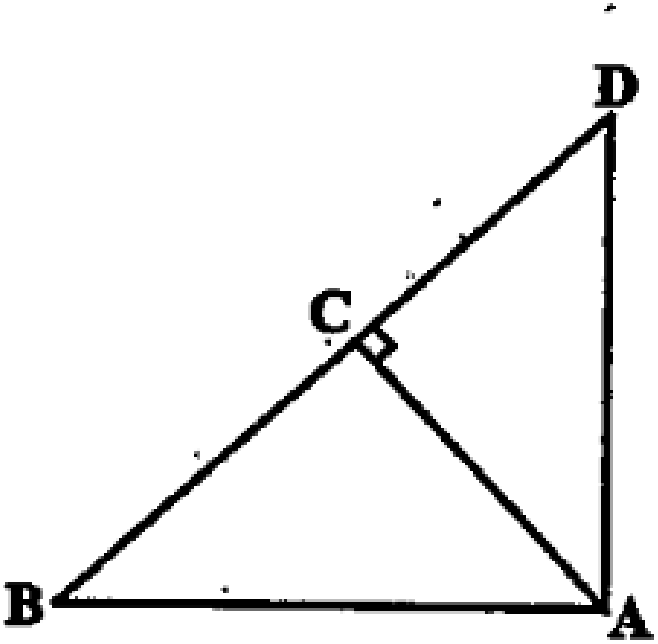
61. In Fig.6.53,ABD is a triangle right angle at A and $AC \perp BD$ .Show that



(i)

$AB^2 = BC.BD.$

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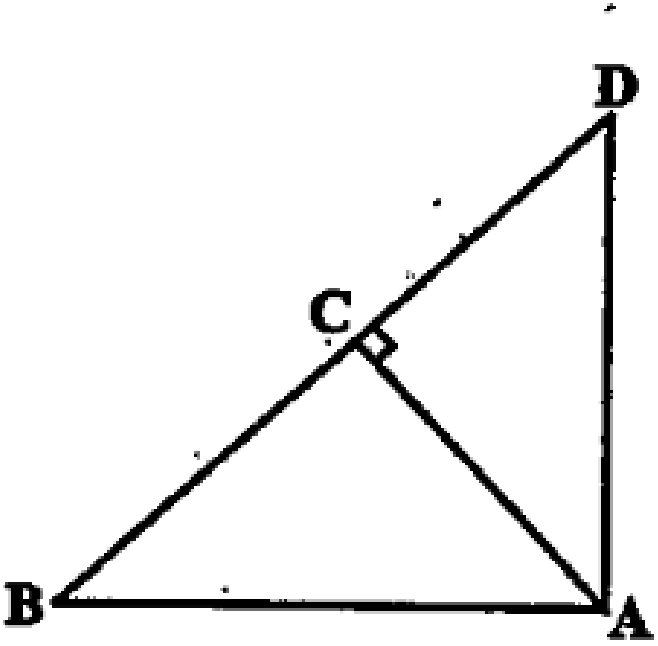
62. In Fig.6.53,ABD is a triangle right angle at A and $AC \perp BD$ .Show that



(ii)

$AC^2 = BC.\ DC.$

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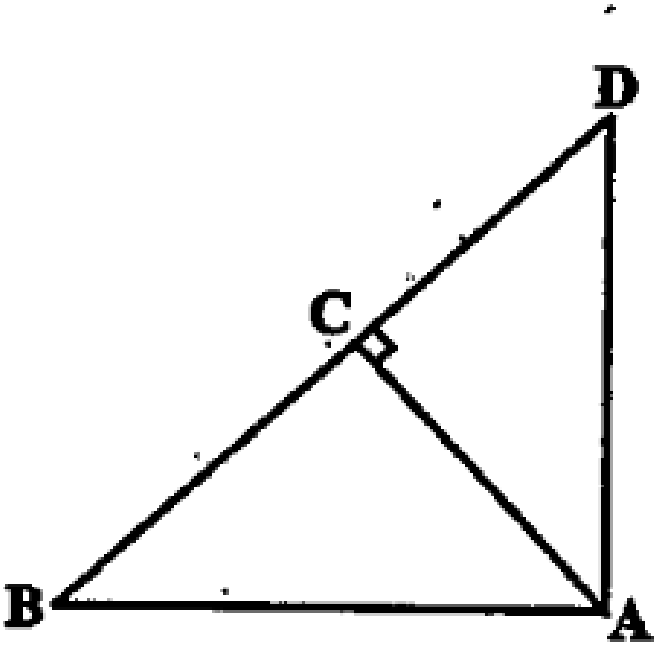
63. In Fig.6.53,ABD is a triangle right angle at A and $AC \perp BD$ .Show that



(iii)

$AD^2 = BD.CD.$

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64. ABC is an isosceles triangle right angled at C.Prove that $AB^2 = 2AC^2.$

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65. ABC is an isosceles triangle with AC=BC.If $AB^2 = 2AC^2$.prove that ABC is a right triangle.

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66. ABC is an equilateral triangle of sides 2a.Find each of its altitudes.

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67. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squarea of its diagonals.

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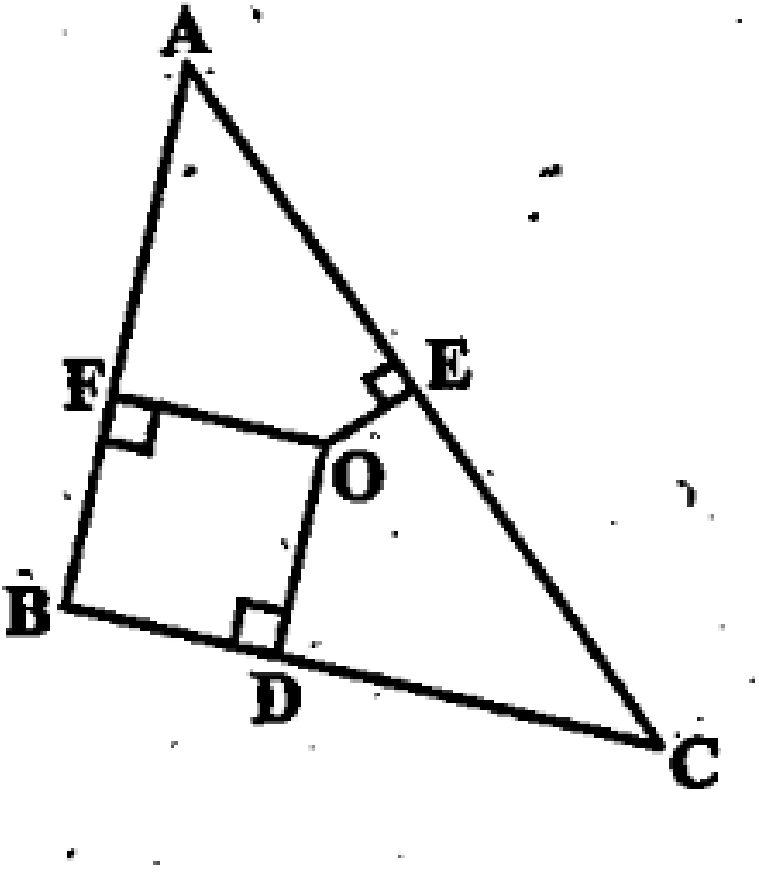
68. In Fig.6.45,O is a point in the interior of a triangle ABC, $OD \perp BC, OE \perp AC$ and $OF \perp AB$.Show that



(i)

$$OA^2 + OB^2 + OC^2 - OD^2 - OE^2 - OF^2 = AF^2 + BD^2 + CE^2$$

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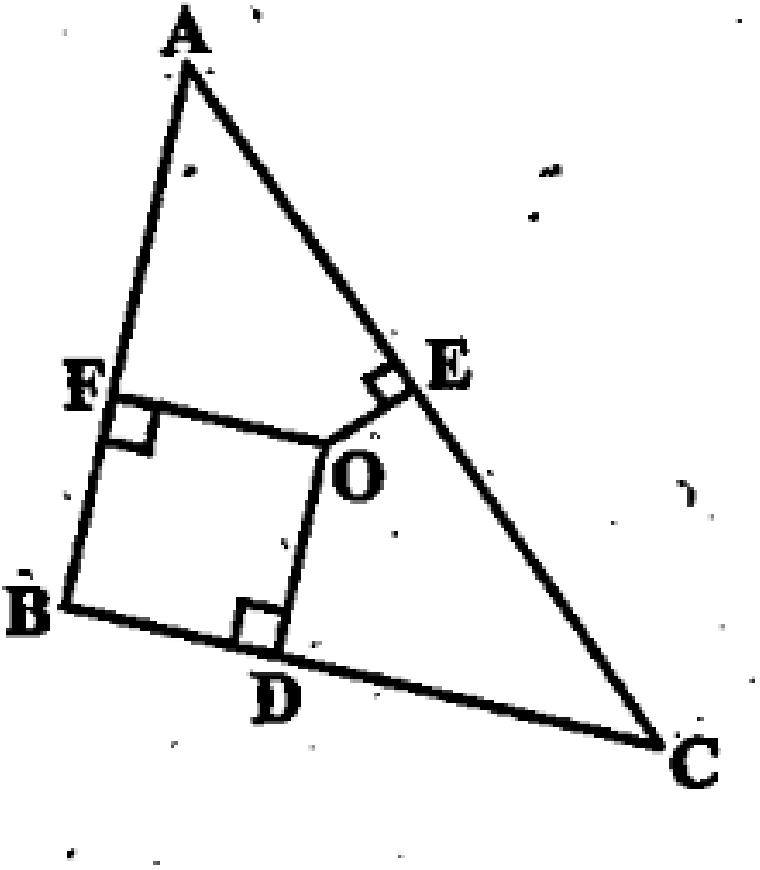
69. Fig.6.45,O is a point in the interior of a triangle ABC, $OD \perp BC, OE \perp AC$ and $OF \perp AB$.Show that



(ii)

$$AF^2 + BD^2 + CE^2 = AE^2 + CD^2 + BF^2$$

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70. A ladder 10 m long reaches a window 8m above the ground. Find the distance of the foot of the ladder from base of the wall.

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71. A guy wire attached to a vertical pole of heigh 18 m is 24 m long and has a stake attached to the other end. How far from the base of tho pole should the stake be driven so that the wire will be taut?

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72. An aeroplane leaves an airport and flies due north at a speed of 1000 km per hour. At the same time another aeroplane leaves the same airport and flies due west at a speed of 1200 km per hour. How far apart will be the twö planes after $1\left(\frac{1}{2}\right)$ hours?.

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73. Two poles of heights 6 m and 11 m stand on a plane ground. If the distance between the feet of the poles is 12 m, find the distance between their tops.

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74. D and E are points on the sides CA and CB respectively of a triangle ABC right angled at C.Prove that, $AE^2 + BD^2 = AB^2 + DE^2$.

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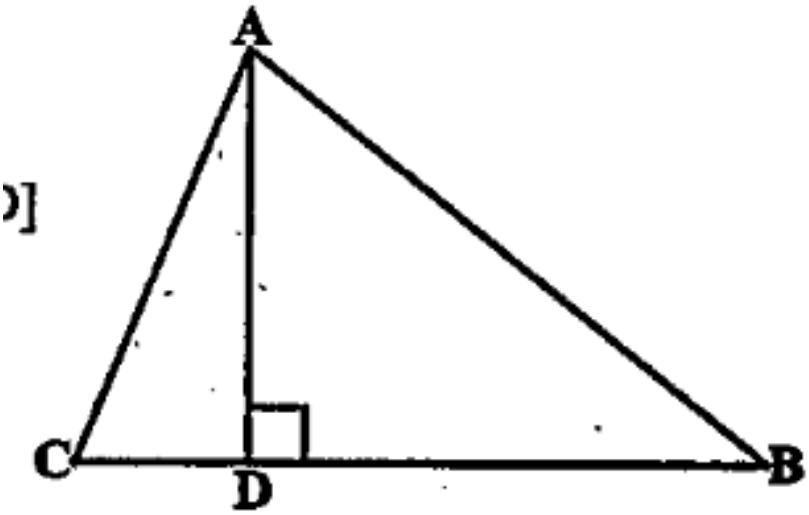
75. The perpendicular from A on side BC of a $\triangle ABC$ intersects BC at D such that DB = 3 CD (see Fig. 6.55). Prove that

$2AB^2 = 2AC^2 + BC^2.$



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76. In an equilateral triangle ABC, D is a point on side BC such that BD =1/3BC.Prove that $9AD^2 = 7AB^2$

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77. In an equilateral triangle, prove that three times the square of one side is equal to four times the square of one of its altitudes.

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78. Tick the correct answer and a justify :In $\triangle ABC, AB = 6\sqrt{3}, AC = 12cm$ and BC=6cm.The angle B is a)120° b)60° c)90° d)45°

A. 120°

B. 60°

C. 90°

D. 45°

Answer:

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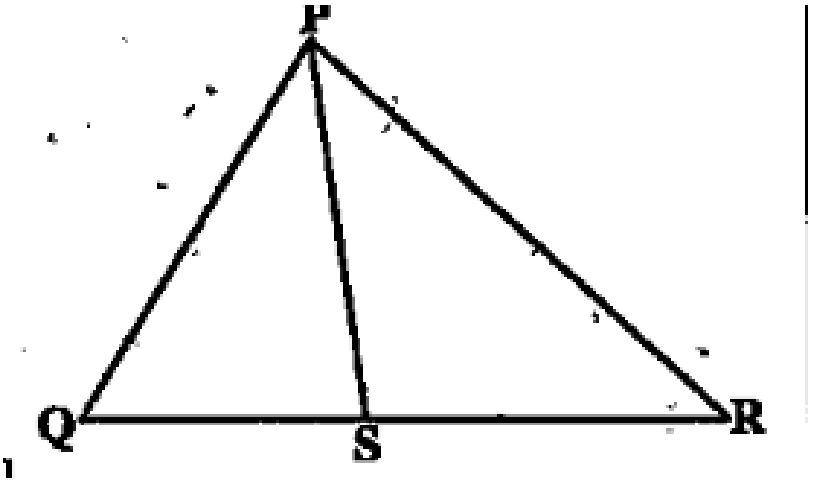
79. In Fig.6.56,PS is the bisector of $\angle QPRof\ \triangle\ PQR$.Prove that $\frac{QS}{SR} = \frac{PQ}{PR}$.



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80. In Fig.6.57,

D is point on hypothenuse AC of $\triangle\ ABC$,such that $BD \perp AC, DM \perp BC$ and $DN \perp AB$.Prove that :(i) $DM^2 = DN.MC$

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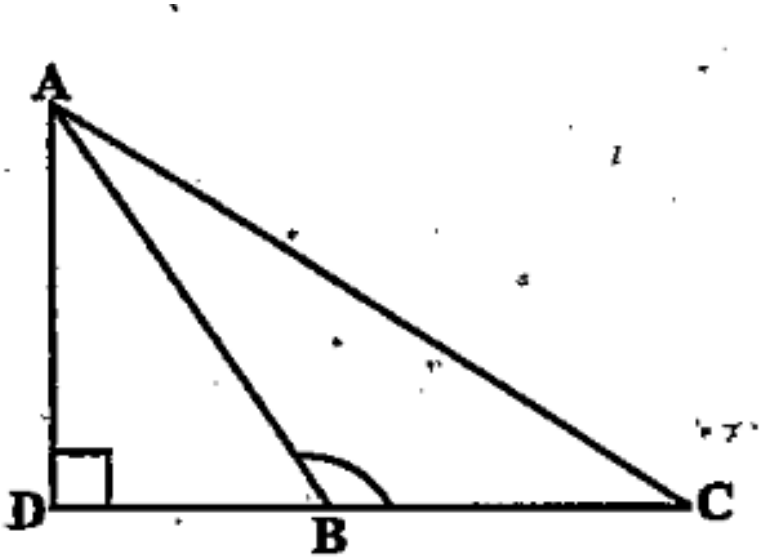
81. In Fig.6.58,



ABC is a triangle in which $\angle ABC > 90^\circ$ and $AD \perp CB$produced.Prove that $AC^2 = AB^2 + BC^2 + 2BC.\ BD.$

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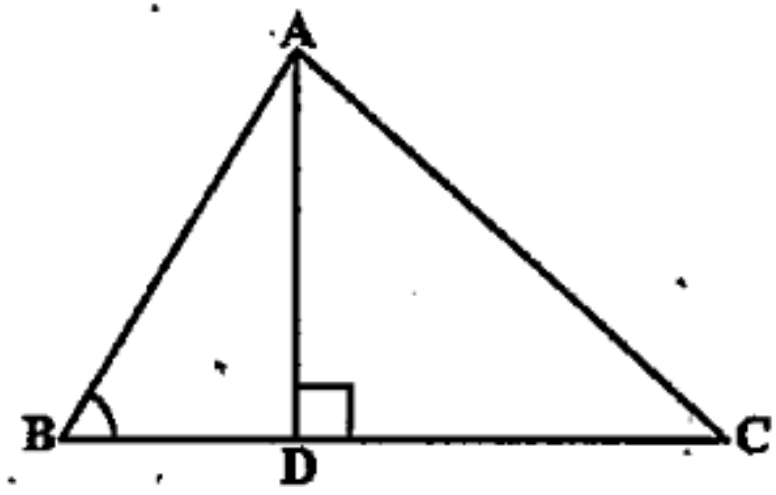
82. In Fig.6.59,



ABC is a triangle in which $\angle ABC < 90^\circ$ and $AD \perp BC$.Prove that $AC^2 = AB^2 + BC^2 - 2BC.\,BD.$

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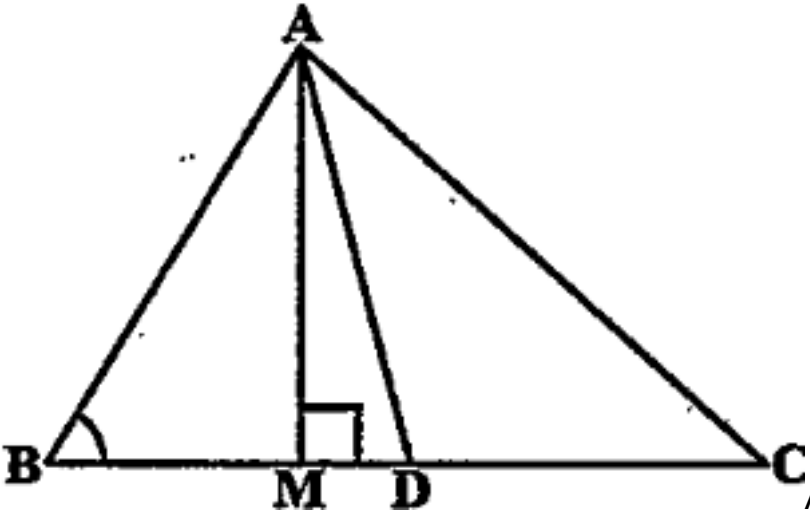
83. In Fig.6.60,



AD is a median of a triangle ABC and $AM \perp BC$.Prove that :(i) $AC^2 = AD^2 + BC.DM + \left(\frac{BC}{2}\right)^2$

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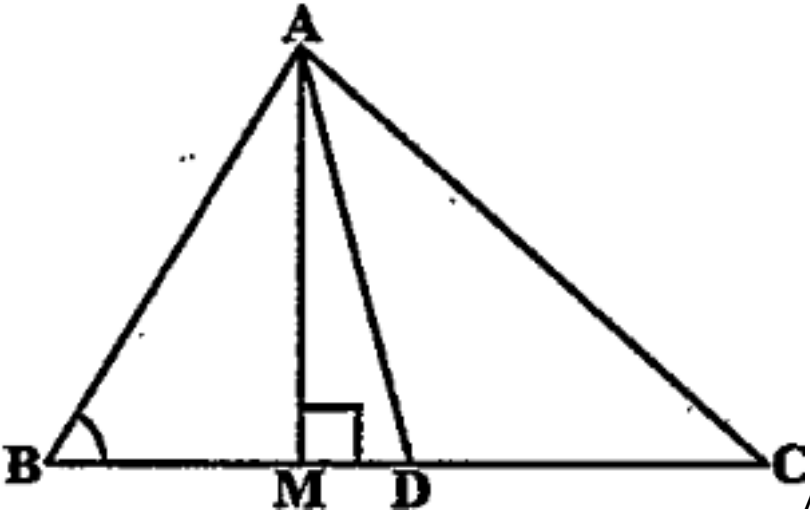
84. In Fig.6.60,



AD is a median of a triangle ABC and $AM \perp BC$.Prove that :(ii) $AB^2 = AD^2 - BC.DM + \left(\frac{BC}{2}\right)^2$

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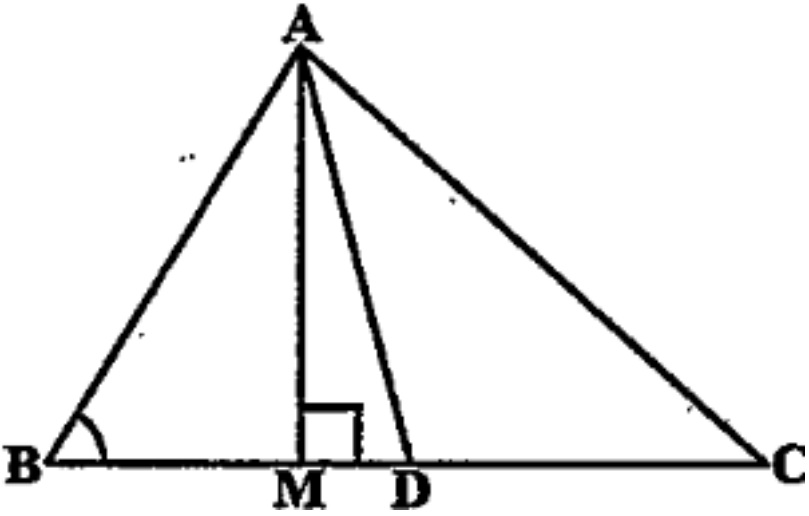
85. In Fig.6.60,



AD is a median of a triangle ABC and $AM \perp BC$.Prove that :(iii) $AC^2 + AB^2 = 2AD^2 + \frac{1}{2}BC^2$

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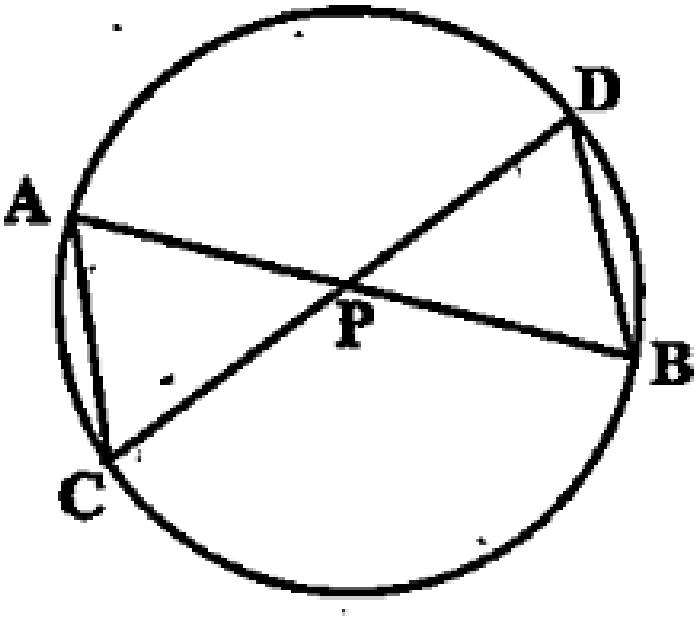
86. In Fig.6.61,



two chords AB and CD intersect each other at the point P.Prove that :(i) $\triangle APC \sim \triangle DPB$

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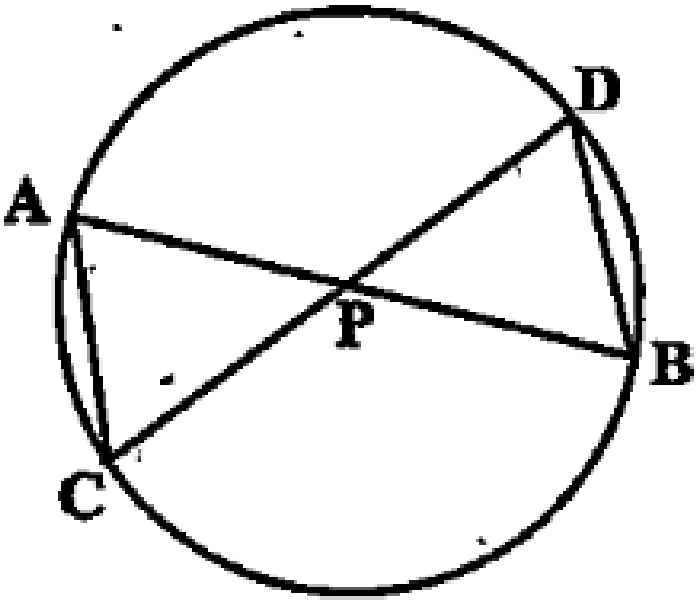
87. In Fig.6.61,



two chords AB and CD intersect each other at the point P.Prove that :

(ii)PA.PB=CP.DP

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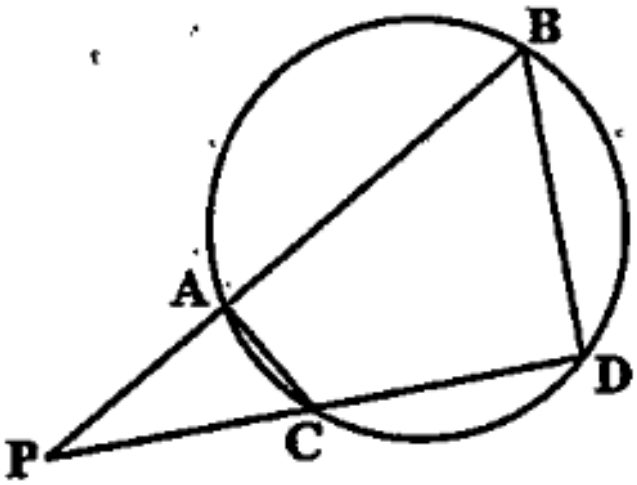
88. In Fig.6.62,



two chords AB and CD of a circle intersect each other at the point P(when produced)outside the circle.Prove that (i) $\triangle PAC \sim \triangle PDB$

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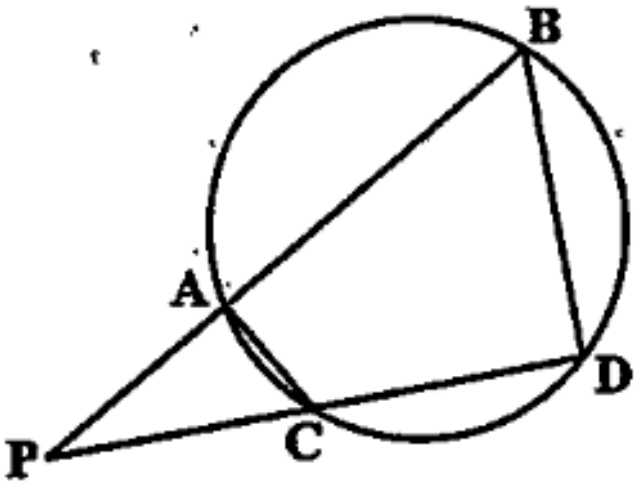
89. In Fig.6.62,



two chords AB and CD of a circle intersect each other at the point P(when produced)outside the circle.Prove that (ii)PA.PB=PC.PD

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90. State basic proportionality theorem.

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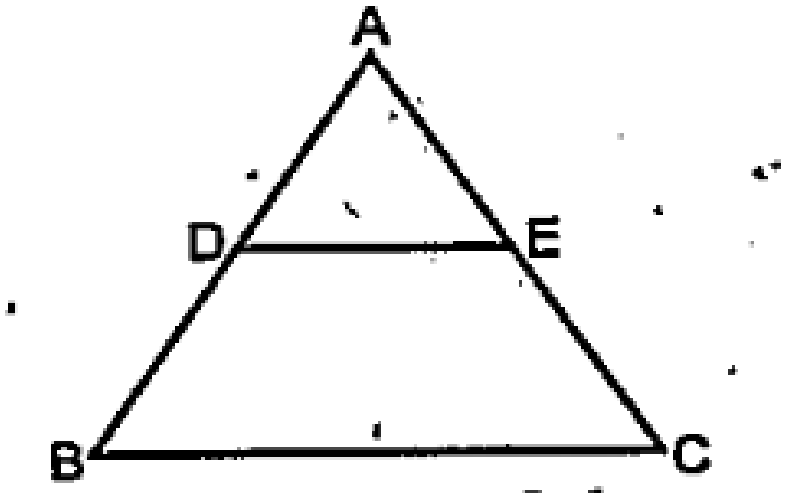
91. In the adjoining figure,



$DE \| BC$ and AD=1 cm,BD=2 cm.What is the ratio of the area of $\triangle ABC$to the area of $\triangle ADE$?

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92. The areas of two similar triangles are $169cm^2$ and $121cm^2$ respectively.If the longest side of the larger triangle is 26 cm.what is the length of longest side of the smaller triangle.

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93. If $\triangle ABC$ and $\triangle DEF$ are similar triangle such that $\angle A = 57^\circ$ and $\angle E = 73^\circ$, what is the measure of $\angle F$?

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94. If the altitude of two similar triangle are in the ratio 2:3 what is the ratio of their areas?

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95. State Pythagoras theorem.

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96. The lengths of the diagonals of a rhombus are 30cm and 40cm.Find the side of the rhombus.

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97. In an isosceles $\triangle ABC$if $AC = BC$ and $AB^2 = 2AC^2$ then what is the measure of $\angle C$?

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98. What is the height of an equilateral triangle having each side 12 cm?

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99. Sides of two similar triangle are in the ratio 4:9.Areas of these triangle are in the ratio

a)$2:3$ b)$4:9$ c)$81:16$ d)$16:81$

A. $16:81$

B. $81:16$

C. $4:9$

D. $2:3$

Answer:

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100. $\triangle ABC \sim \triangle DEF$such that ar $(\triangle ABC) = 36cm^2$ and $(\triangle DEF) = 49cm^2$.Then the ratio of their corresponding sides is

A. $6:7$

B. $7:6$

C. $\sqrt{6}:\sqrt{7}$

D. $36:49$

Answer:

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101. $\triangle ABC$ and $\triangle DEF$ are two equilateral triangle such that D is the mid point of BC.The ratio of the areas of triangle ABC and BDE is

A. $1:2$

B. $2:1$

C. $4:1$

D. $1:4$

Answer:

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102. Two isosceles triangles have their corresponding angles equal and their areas are in the ratio 25:36.The ratio of their corresponding heights is

A. $5:6$

B. $6:5$

C. $25:36$

D. $36:25$

Answer:

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103. If D,E,F are the mid-point of sides AB,BC and CA respectively of $\triangle$ then the ratio of the areas of triangles $\triangle DEF$ and ABC is

A. $1:2$

B. $2:3$

C. $1:4$

D. $4:5$

Answer:

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104. In a $\triangle ABC, \angle A = 90^\circ$,AB=5cm and AC=12cm.If $AD \perp BC$ then the value of AD will be

a)60/13 cm b)1/60cm c)13/2cm d) $\frac{2\sqrt{12}}{13} cm$

A. 60/13 cm

B. 1/60cm

C. 13/2cm

D. $\frac{2\sqrt{12}}{13}cm$

Answer:

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105. In an equilateral triangle ABC if $AD \perp BC$ then AD^2=

a)CD^2 b)$2CD^2$ c)$3CD^2$ d)$4CD^2$

A. cd^2

B. $2CD^2$

C. $3CD^2$

D. $4CD^2$

Answer:

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106. If in $\triangle ABC$ and $\triangle DEF$, $\frac{AB}{DE} = \frac{BC}{FD}$ then $\triangle ABC \sim \triangle DEF$ when

A. $\angle B = \angle D$

B. $\angle A = \angle D$

C. $\angle A = \angle F$

D. $\angle B = \angle E$

Answer:

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107. In an isosceles $\triangle ABC, \angle C = 90^\circ$ .If AC=6cm then the value of AB will be __-

a)6cm b)$2\sqrt{6}cm$ c)$4\sqrt{2}cm$ d)$6\sqrt{2}$

A. 6cm

B. $2\sqrt{6}cm$

C. $4\sqrt{2}cm$

D. $6\sqrt{2}$

Answer:

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108. If in $\triangle ABC$ and $\triangle PQR$ we have $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$ then

A. $\triangle PQR \sim \triangle ABC$

B. $\triangle PQR \sim \triangle CAB$

C. $\triangle CBA \sim \triangle PQR$

D. $\triangle BCA \sim \triangle PQR$

Answer:

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