MATHS

BOOKS - VK GLOBAL PUBLICATION MATHS (HINGLISH)

TRIANGLES

Very Short Answer Questions

1. Two sides and the perimeter of one triangle are respectively three times the corresponding sides and the perimeter of the other triangle. Are the two triangles similar? Why?

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2. A and B are respectively the points on the sides PQ and PR of a ΔPQR such that PQ =12.5 cm, PA= 5 cm, BR = 6 cm and PB = 4 cm. Is AB

|| QR? Give reason for your answer.

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3. If $\triangle ABC \sim \triangle QRP, \frac{\text{Area } (\triangle ABC)}{\text{Area}(\triangle PQR)} = \frac{9}{4}, AB = 18cm, BC = 15cm$, then find the length of PR.

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4. If $\Delta ABC \sim \Delta PQR$ with $\frac{BC}{QR} = \frac{1}{3}$,then $\frac{ar(\Delta PRQ)}{ar(\Delta BCA)}$ is equal to

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5. $\Delta ABC \sim \Delta DEF$ if DE:AB=2:3 and arΔDEF=44sq. Units then ar ΔABC= .....sq. units.

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6. Is the triangle with sides 12 cm, 16 cm and 18 cm a right triangle?

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Short Answer Questions I

1. In ΔPQR and ΔMST, $\angle P = 55^\circ, \angle Q = 25^\circ, \angle M = 100^\circ$ and $\angle S = 25^\circ$. Is $\Delta QPR \sim \Delta TSM$? Why ?

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2. If ABC and DEF are similar triangles such that $\angle A = 47^\circ$ and $\angle E = 63^\circ$, then the measures of $\angle C = 70^\circ$. Is it true? Give reason.

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3. Let $\Delta ABC \sim \Delta DEF$ and their areas be , respectively , $64cm^2$ and $121cm^2$. If EF = 15.4 cm, find BC

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

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5. 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, 25 cm (ii) 3 cm, 8 cm, 6 cm

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6. If ABC and DEF are similar such that $2AB = DE$ and $BC = 8cm$, then $EF =$ (a) 16cm (b) 12cm (c) 8cm (d) 4cm.

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7. If the ratio of the perimeter of two similar triangles is 4:25, then find the ratio of the areas of the similar triangles.

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8. In an isosceles ΔABC, if $AC = BC$ and $AB^2 = 2AC^2 \text{then} \angle C = ?$

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9. The lengths of the diagonals of a rhombus are 16 cm and 12 cm . The length of each side of the rhombus is

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10. A man goes 24 m due west and then 10 m due north. How far is he from the starting point ?

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11. $\Delta ABC \sim \Delta DEF$ such that AB = 9.1 cm and DE =6.5 cm. If the perimeter of ΔDEF is 25 cm, what is the perimeter of ΔABC?

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12. $\Delta ABC \sim \Delta PQR$, if area of $\Delta ABC = 81cm^2$,area of $\Delta PQR = 169cm^2$ and AC =7.2cm,find the length of PR.

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Short Answer Questions Ii

1. In Fig. 7.11, $De||BC$. If AD= x, DB= x- 2, AE = x + 2 and EC =x -1, find the value of x.

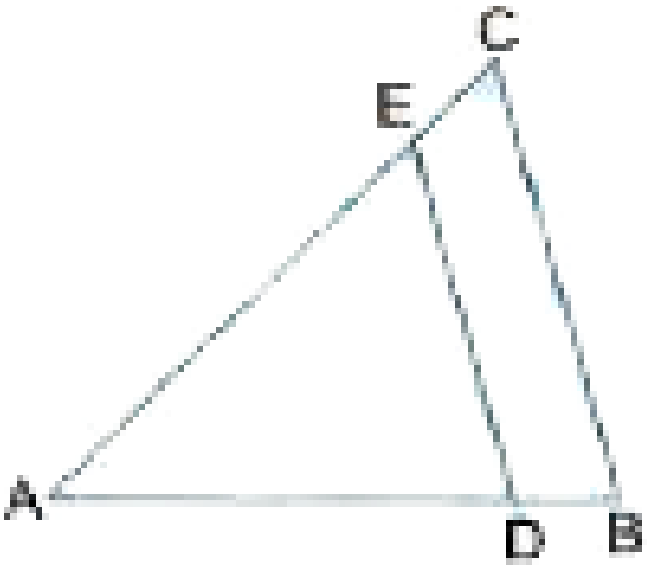

Fig. 7.11

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2. E and F are points on the sides PQ and PR respectively of a ΔPQR. Show that $Ef||QR$. If PQ = 1.28 cm,PR= 2.56 cm,PE = 0.18 cm and PF= 0.36 cm.

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3. 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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4. In figure, If LM || CB and LN || CD, prove that $\frac{AM}{AB} = \frac{AN}{AD}$.

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5. In Fig. 7.15,$DE||OQ$ and $Df||OR$,Show that $Ef||QR$.

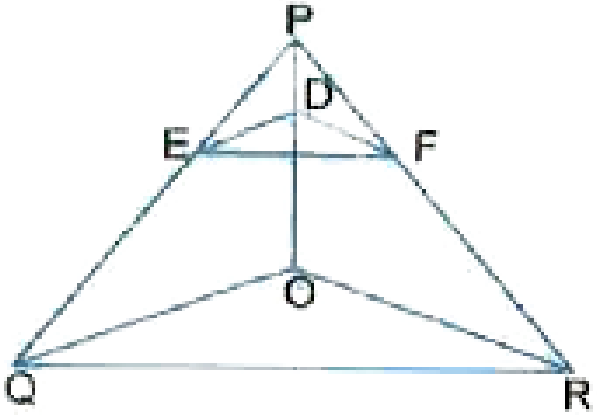

Fig. 7.15

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6. The line joining the mid-points of two sides of a triangle is parallel to the third side.

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7. State which pairs of triangles in Figure 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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8. In Fig. 4.96, $\frac{AO}{OC} = \frac{BO}{OD} = \frac{1}{2}$ and $AB = 5cm$. Find the value of DC . (FIGURE)

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

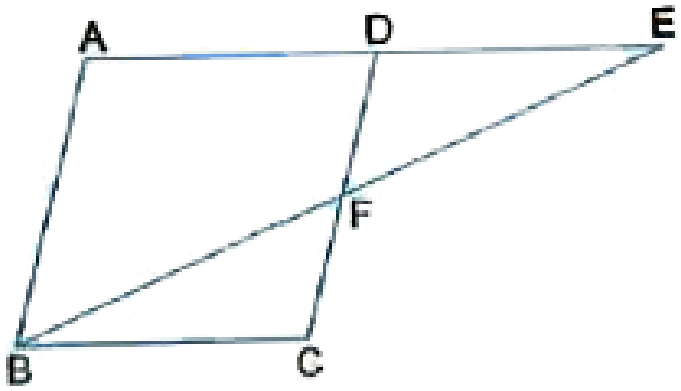

Fig. 7.19

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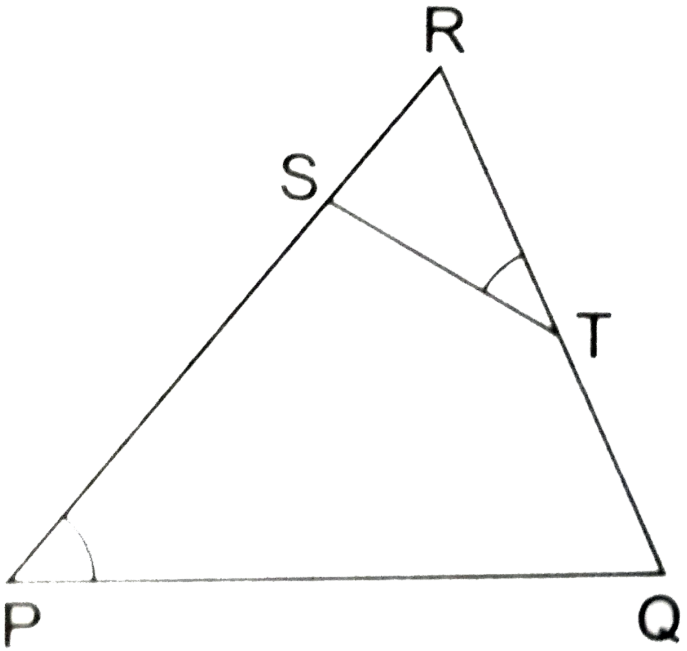
10. In the given figure, S and T are points on sides PR and QR of ΔPQR such that $\angle P = \angle RTS$. Show that $\Delta RPQ \sim \Delta RTS$.



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11. In figure ABC and AMP are two right triangles, right angles at B and M respectively. Prove that (i) $\Delta ABC \Delta AMP$ (ii) $\frac{CA}{PA} = \frac{BC}{MP}$

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12. D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$. Show that $CA^2 = CB\dot{C}D$.

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13. ABC is an equilateral triangle of side 2a. Find each of its altitudes.

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14. An aeroplane leaves an airport and flies due north at a speed of 1000 km per hour. At the same tune, another aeroplane leaves the same airport and flies due west at a speed of 1200 km per hour. |How far apart will be the two planes after 1`1/2

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15. In the given figure, ΔABC and ΔDBC are on the same base BC. If AD intersects BC at O, prove that $\frac{ar(\Delta ABC)}{ar(\Delta DBC)} = \frac{AO}{DO}$

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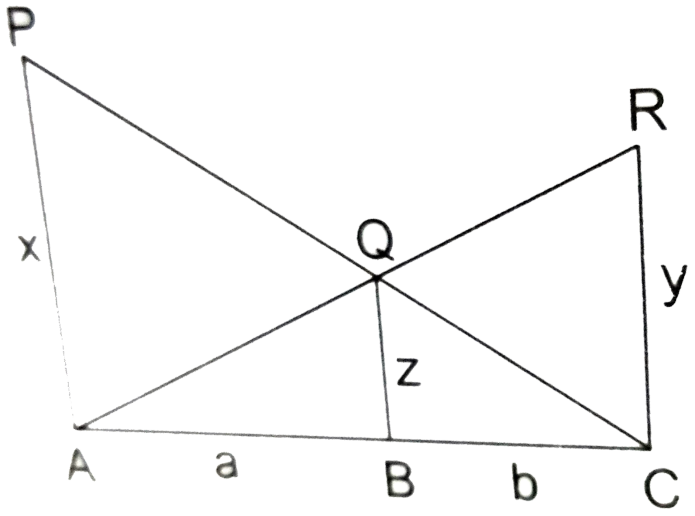
16. In the given figure, PA, QB and RC each is perpendicular to AC such that $PA = x, RC = y, QB = z, AB = a,$ and $BC = b$

Prove that $\frac{1}{x} + \frac{1}{y} = \frac{1}{z}$



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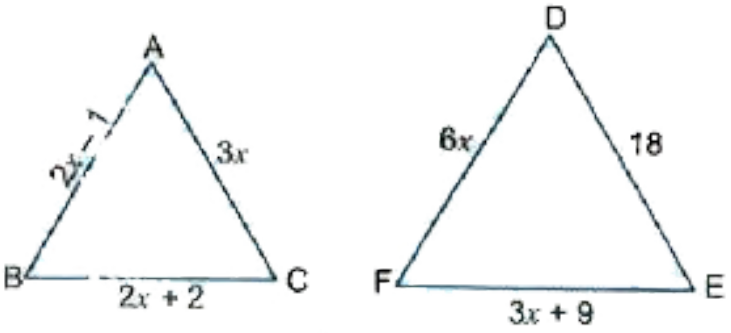
17. In Fig. 7 .27, if $\Delta ABC \sim \Delta DEF$ and their sides are oflengths (in cm) as marked along them, then find the lengths of the sides of each triangle.



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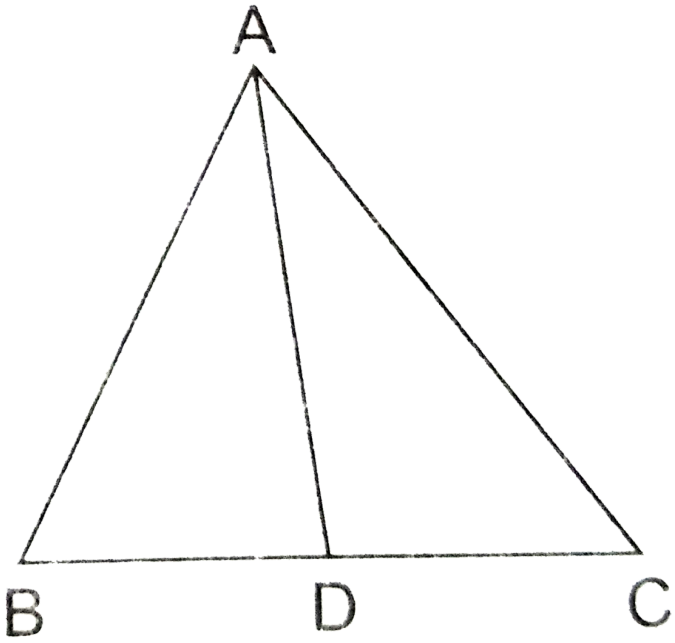
18. In ΔABC it is given that $\frac{AB}{AC} = \frac{BD}{DC}$. If $\angle B = 70^\circ$ and $\angle C = 50^\circ$ then $\angle BAD = ?$



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19. If the diagonals of a quadrilateral divide each other proportionally, prove that it is a trapezium

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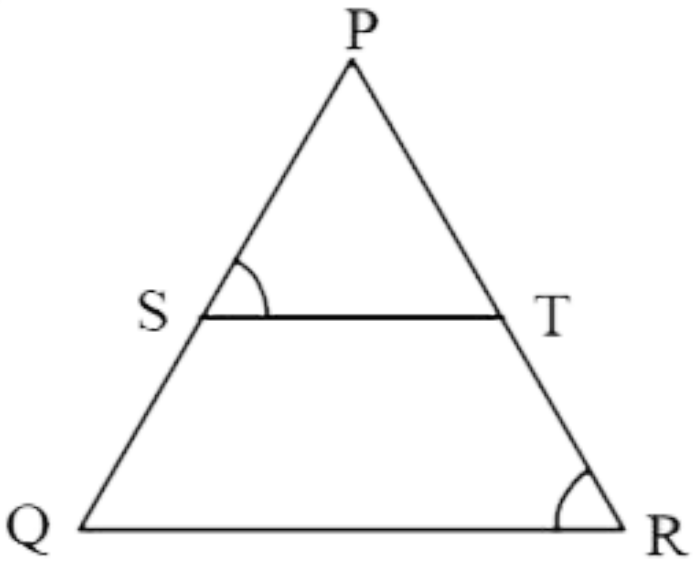
20. In the given figure $\frac{PS}{SQ} = \frac{PT}{TR}$ and $\angle PST = \angle PRQ$. Prove that PQR is an isoscles triangle.



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21. 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 triangles AOB and COD.

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22. In the given Fig. 7.32, find the value of x in terms of a, b and c.

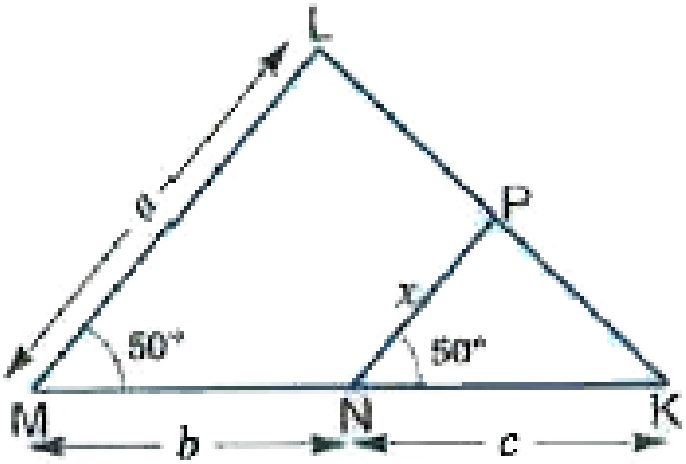

Fig. 7.32

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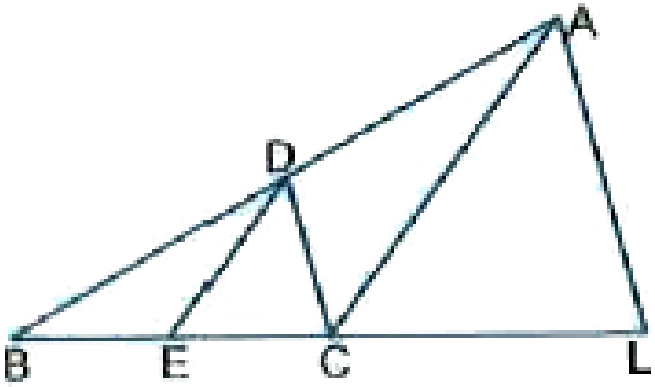
23. In the given Fig. 7.33, $Cd||LA$ and $DE||AC$. Find the length of CL if BE= 4 cm and EC= 2 cm.



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24. In the given Fig. 7 .34, AB = AC. E is a point on CB produced. If AD is perpendicular to BC and EF perpendicular to AC, prove that ΔABD is

similar to ΔCEF.

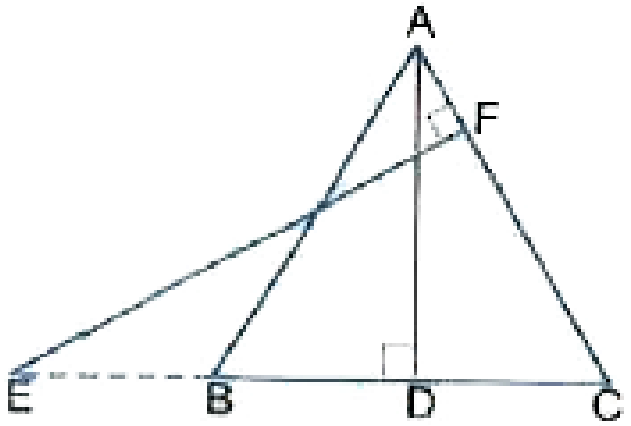

Fig. 7.34

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Long Answer Questions

1. The line drawn from the midpoint of one side of a triangle parallel to another side bisects the third side.

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

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4. In Fig. 4.123, ABCD is a trapezium with $AB \mid \mid DC$. If ΔAED is similar to ΔBEC, prove that $AD = BC$.

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5. Prove that the area of an equilateral triangle described on a side of a right-angled isosceles triangle is half the area of the equilateral

triangle described on its hypotenuse.

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6. If the areas of two similar triangles are equal, prove that they are congruent.

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7. The areas of the two similar triangles are in the ratio of the square of the corresponding medians.

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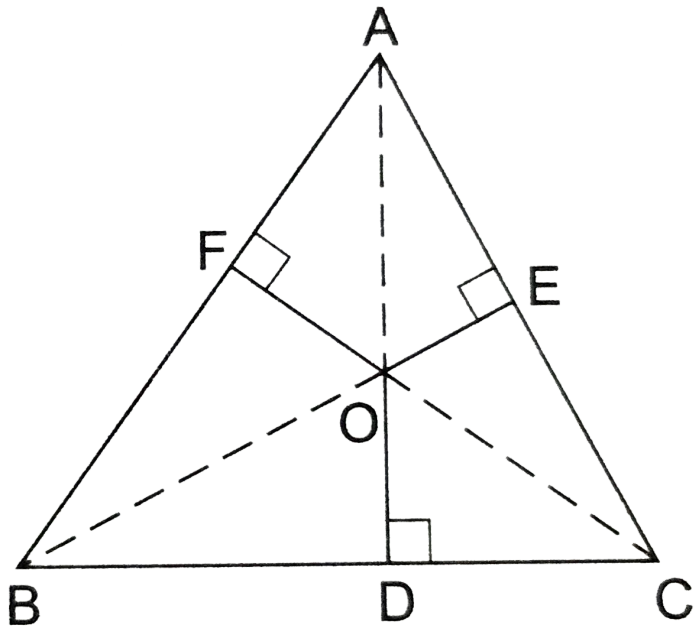
8. O is the a point in the interior of $\Delta ABC, OD \perp BC, OE \perp AC$ and AC and $OF \perp AB$, as shown in the figure,



Prove that :

$(i) OA^2 + OB^2 + OC^2 - OD^2 - OD^2 - OF^2 = AF^2 + BD^2 + CE^2$

(ii) $AF^2 + BD^2 + CE^2 = AD^2 + BF^2 + CD^2$

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9. The perpendicular from A on side BC of a ABC intersects BC at D such that DB = 3 CD. Prove that $2AB^2 = 2AC^2 + BC^2$.

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10. 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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11. Prove that, if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

Using the above result, do the following:

In Fig. 7 .45 $DE||BC$ and BD = CE. Prove that ΔABC is an isosceles

triangle.

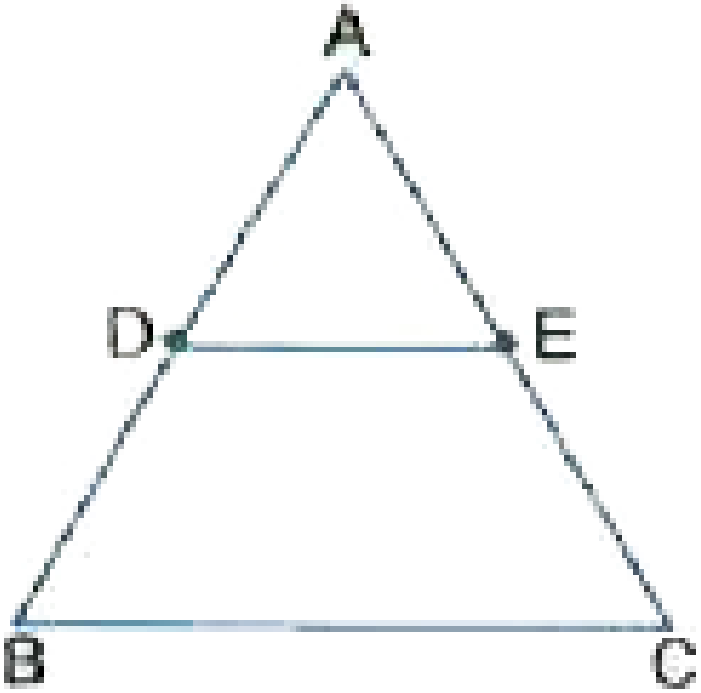

Fig. 7.45

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12. $In \Delta ABCA = 90^\circ$ and $AC \perp BD$, then Show that $(a)AB^2 = BC.BD (b)AC^2 = BC.DC (c)AD^2 = BD.CD$

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13. 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 triangles AOB and COD.

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14. Prove that, in a right triangle, the square of the hypotenuse is equal to the sum of squares of the other two sides. Using the above, do the following:

Prove that, in a ΔABC, if AD is perpendicular to BC, dien $AB^2 + CD^2 = AC^2 + BD^2$.

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15. In a triangle, if the square on one side is equal to the sum of the squares on the other two sides, prove that the angle opposite to the first side is a right angle. Use the above theorem to find the measure of $\angle PKR$ in Fig. 7.52.

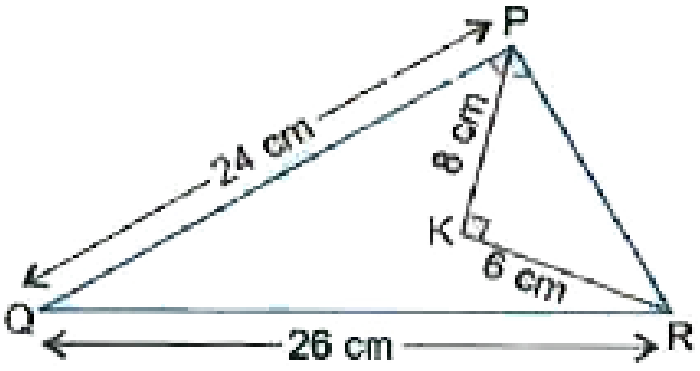

Fig. 7.52

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

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17. 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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18. 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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Hots High Order Thinking Skills

1. In Fig. 7.58, $\Delta FEC \equiv \Delta GDB$ and $\angle 1 = \angle 2$. Prove that $\Delta ADE \sim \Delta ABC$.

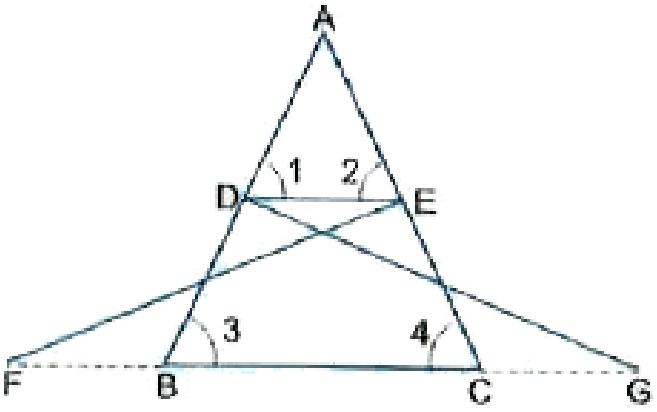

Fig. 7.58

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2. 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 $\Delta ABC \Delta PQR$.

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3. In figure, P is the mid-point of BC, Q is the mid-point of BC, Q is the mid-point of AP , such that BQ produced meets AC at R.

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4. In figure ABC and DBC are two triangles on the same base BC. If AD intersects BC at O, show that $\frac{ar(ABC)}{ar(DBC)} = \frac{AO}{DO}$.

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5. Two poles of height a metres and b metres are p metres apart. Prove that the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is given by $\frac{ab}{a+b}$ metres.

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

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7. Through the mid-point M of the side CD of a parallelogram $ABCD$, the line BM is drawn intersecting AC at $LandAD$ produced at E . Prove that $EL = 2BL$.

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Proficiency Exercise Very Short Answer Questions

1. If $\triangle ABC$ and $\triangle DEF$ are similar triangles such that $\angle A = 45^\circ$ and $\angle F = 56^\circ$, then find the ratio of their corresponding attitudes.

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2. If ΔABC and ΔDEF are two tnangles such that $\frac{AB}{EF} = \frac{BC}{FD} = \frac{CA}{DE} = \frac{3}{4}$ then find $ar(\Delta DEF) : ar(\Delta ABC)$.

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3. If $\Delta ABC \sim \Delta PQR$, $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{16}{9}$, AB=2cm and AC= 12 cm, then find the value of PR.

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4. In ΔABC, AB = 24cm, BC = 10 cm and AC= 26 cm. Is this triangle right triangle?

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5. It is given that $\Delta DEF \sim \Delta RPQ$. Is it true to say that $\angle D = \angle R$ and $\angle F = \angle P$? Why?

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6. A and Bare respectively the points on the sides PQ and PR of a triangle PQR such that PQ = 10.5 m PA = 4.5 m, BR= 8 m and PB= 6 m. Is $AB||QR$?

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7. Is the following statement true? Why? "Two quadrilaterals are similar, if their corresponding angles are equal".

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8. If in two right triangles, one of the acute angles of one triangle is equal to an acute angle of the other triangle. Can you say that two triangles will be similar? Why?

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9. If $\Delta ABC \sim \Delta ZYX$, then name the angles equal to ΔB and ΔZ respectively.

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10. L and M are respectively the points on the sides DE and DF of a triangle DEF, such that DL = 4, $LE = \frac{4}{3}$, $DM = 6$ and $DF = 8$. Is $Lm || EF$? Give reason.

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11. E and F are points on the sides PQ and PR respectively of ΔPQR. 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(ii) PE = 4 cm. QE = 4.5 cm. PF = S cm and RF = 9 cm(iii)

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12. L and M are points on the sides DE and DF respectively of a MJEF.

State whether LM II EF or not.

DE = 8 cm, DF = 15 cm, LE = 3.2 cm and MF= 6 cm.

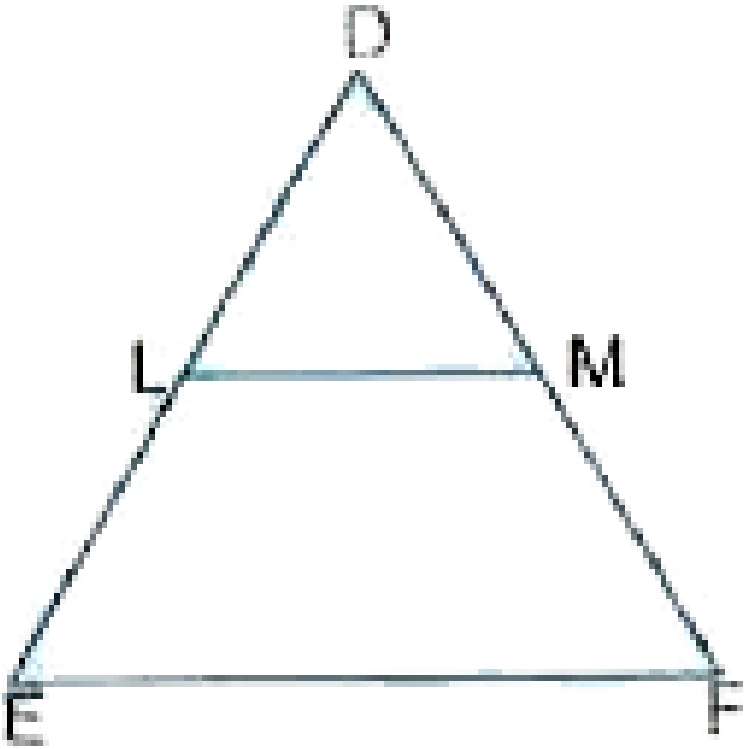

Fig. 7.66

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13. The ratio of the corresponding altitudes of two similar triangles is $\frac{2}{5}$. Is it correct to say that ratio of their areas is also $\frac{2}{5}$? Why?

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14. If the areas of two similar triangles ABC and PQR are in the ratio $9:16$ and $BC = 4.5cm$, what is the length of QR?

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Proficiency Exercise Short Answer Type Questions Ii

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

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2. $PQ||BC$ and AP:PB = 1 : 2 find $\frac{\text{area}(\Delta APQ)}{\text{area}(\Delta ABC)}$.

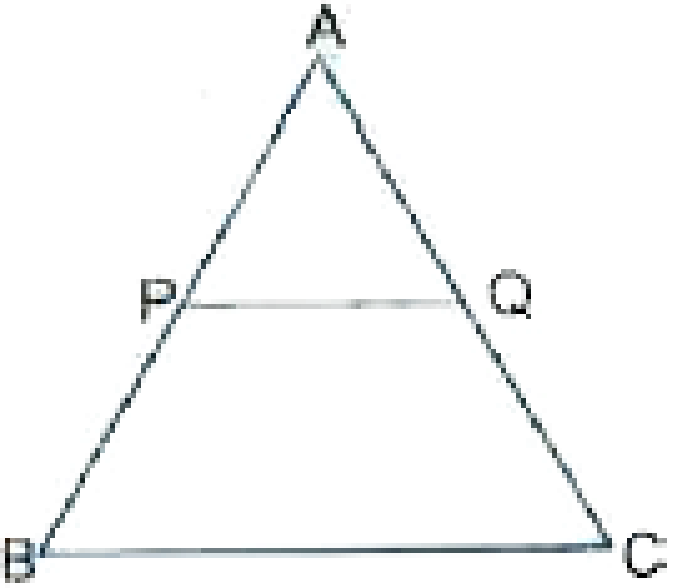

Fig. 7.67

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3. $\frac{OA}{OC} = \frac{OD}{OB}$. Prove that $\angle A = \angle C$ and $\angle B = \angle D$.

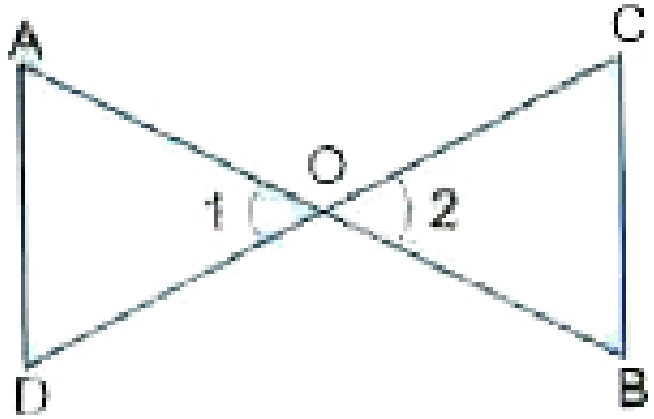

Fig. 7.68

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4. Sides of triangles are given below. Determine which of them are right triangles. In case of a right triangle, write the length of its hypotenuse.

(i) 13 cm, 12 cm, 5 cm (ii) 20 cm, 25 cm, 30 cm.

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5. In ΔABC, $DE||BC$. If AD= 4 cm, DB = 4.5cm and AE = 8cm, find AC.

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6. ABC and BDE are two equilateral triangles such that D is the mid-point of BC . The ratio of the areas of the triangles ABC and BDE is $2:1$ (b) $1:2$ (c) $4:1$ (d) $1:4$

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7. In the given figure, AD is the bisector of $\angle BAC$. If AB =10 cm , AC=6 cm and BC=12 cm, find BD and DC .

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8. The perimeters of two similar triangles ABC and PQR are 60 cm and 36 cm respectively. If PQ = 9 cm, then find the length of AB.

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9. Two poles of height 9 m and 15 m stand vertically upright on a plane ground. If the distance between their tops is 10m, then find the distance between their feet.

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10. The area of two similar triangles PQR and XYZ are $144cm^2$ and $49cm^2$ respectively. If the shortest side of larger ΔPQR be 24 cm, then find the shortest side of the smaller triangle XYZ.

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11. $\Delta ABC \sim \Delta DEF$. If AB= 4cm,BC = 3.5cm,CA = 2.5cmandDF = 7.5cm, then find perimeter of ΔDEF.

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12. In ΔABC, $DE||BC$. If AD= 2.4 cm, AE= 3.2 cm, DE= 2 cm and BC= 5 cm, find BD and CE.

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13. In the given figure, in ΔABC, $DE \mid \mid BC$ so that AD= (4x - 3) cm, AE= (8x-7) cm, BD= (3x-1) cm and CE= (5x-3) cm . Find the value of x.

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14. If a line intersects sides AB and AC of a ΔABCat D and E respectively and is parallel to BC, prove that $\frac{AD}{AB} = \frac{AE}{AC}$

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15. In Fig. 7.69, $DE||BC$. If $\frac{AE}{EC} = \frac{4}{13}$ and AB= 20.4 cm, find AD.

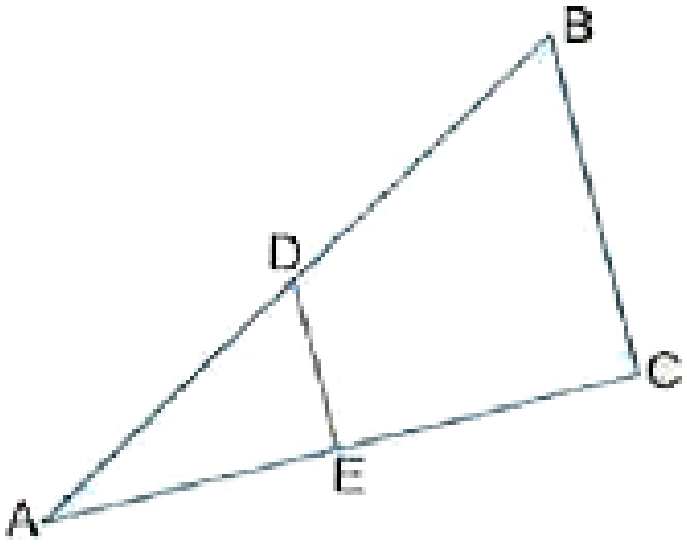

Fig. 7.69

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16. ABCD is a trapezium in which ABIIDC and P and Qare points on AD and BC respectively such that $PQ||DC$. If PD= 12 cm, BQ = 42 cm and QC = 18cm, find AD.

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17. The Hypotenuse of a right triangle is 25 cm and out of the remaining two sides, one is larger than the other by 5 cm, find the lenghts of the other two sides.

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18. For going to a city B from city A there is a route via city C such that $AC \perp CB$, AC =2x km and CB = 2(x + 7) km. It is proposed to construct a 26 km highway which directly connects the two cities A and B. Find how much distance will be saved in reaching city B from city A after the construction of the highway.

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19. The diagonals of a quadrilateral ABCD intersect each other at the point O such that $\frac{AO}{BO} = \frac{CO}{DO}$. Show that ABCD is a trapezium.

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20. A street light bulb is fixed on a pole 6 m above the level of the street. If a women of height 1.5 m casts a shadow of 3 m, then find how far she is away from the base of the pole.

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21. In Fig.7.70, find $\angle E$.

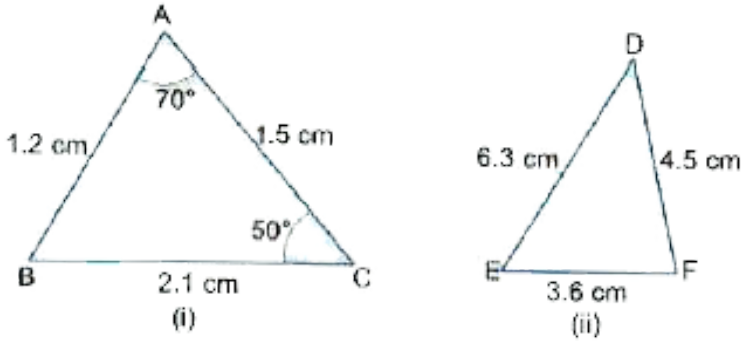

Fig. 7.70

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22. D, E and F are respectively the mid-points of sides AB. BC and CA of ΔABC . Find the ratio of the areas of DDEF andΔABC .

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23. A 15 high tower casts a sshadow 24 long at a certain time at the same time, a telephone pole casts a shadow 16 long. Find the height of the telephone pole.

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

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25. In Fig. 3, ABC is a right triangle, right angled at C and D is the mid-point of BC. Prove that $AB^2 = 4AD^2 - 3AC^2$.

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26. In Fig, ABC is an isosceles triangle in which AB= AC.Eis a point on the side CB produced such that $FE \perp AC$. If $AD \perp CB$, prove that $AB \times EF = AD \times EC$.

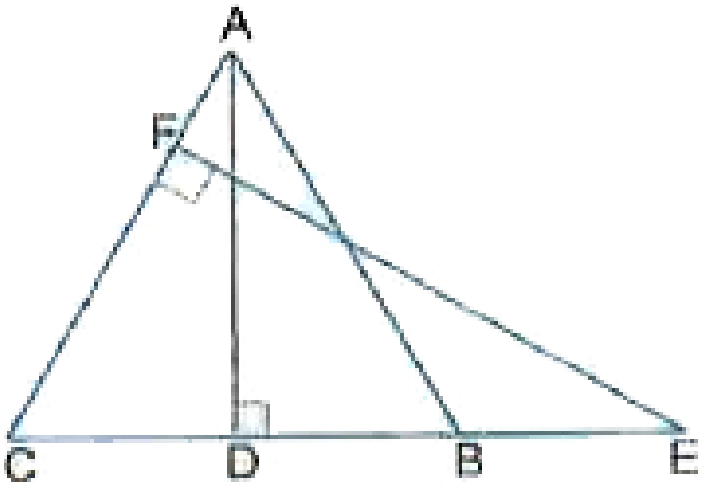

Fig. 7.72

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27. AD is an altitude of an equilateral triangle ABC. On AD as base, another equilateral triangle ADE is constructed. Prove that Area (ADE): Area $(ABC) = 3:4$.

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28. In figure, P is the mid-point of BC, Q is the mid-point of BC, Q is the mid-point of AP, such that BQ produced meets AC at R.

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29. $AB \perp BC$ and $DE \perp AC$. Prove that $\Delta ABC \sim \Delta AED$.

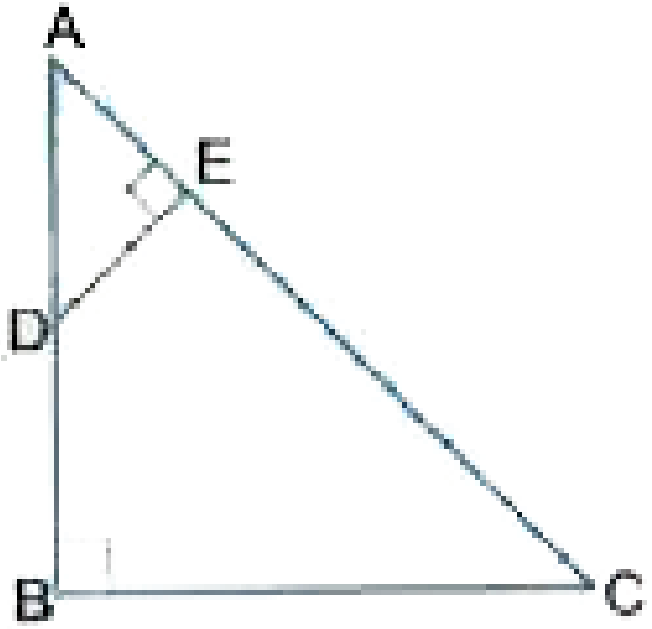

Fig. 7.74

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30. Two triangles $BACandBDC$, right angled at $AandD$ respectively, are drawn on the same base BC and on the same side of BC. If AC and DB intersect at P, prove that $APxPC = DPxPB$.

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31. E is a point on side AD produced of a parallelogram $ABCD$ and BE intersects CD at F. Prove that $D\ ABED\ CFB$.

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32. D and E are respectively the points on the sides AB and AC of a triangle ABC such that AE = 5 cm, AC= 7.5 cm, DE= 4.2 cm and $DE||BC$. Then find length of BC.

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33. If ABC is an equilateral triangle with each side a cm such that $AD \perp BC$, then find AD^2.

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34. In ABC, DE is parallel to base BC, with D on AB and E on AC. If $\frac{AD}{DB} = \frac{2}{3}$, find $\frac{BC}{DE}$.

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35. If E is a point on side r:A of an equilateral triangle ABC such that $BE \perp CA$, then prove that $AB^2 + BC^2 + CA^2 = 4BE^2$.

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36. O is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.

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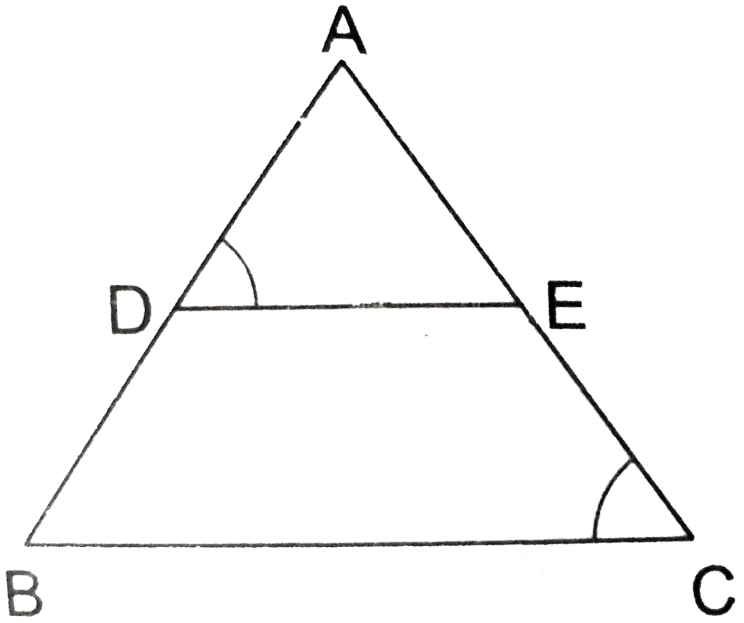
37. In the given figure, $\frac{AD}{DB} = \frac{AE}{EC}$ and $\angle ADE = \angle ACB$. Prove that ΔABC is an isosceles triangle.



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38. In Fig. 4.72, $ABCD$. If $OA = 3x - 19$, $OB = x - 4$, $OC = x - 3$ and $OD = 4$, find x . (FIGURE)

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39. ABC is a triangle and PQ is a straight line meeting AB in P and AC in Q . If $AP = 1cm$, $PB = 3cm$, $AQ = 1.\ 5cm$, $QC = 4.\ 5m$, prove that area of APQ is one-sixteenth of the area of ABC .

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Proficiency Exercise Long Answer Questions

1. 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 ΔABC and ΔEFG respectively. If$\Delta ABC\Delta FEG$, show that:(i) $\frac{CD}{GH} = \frac{AG}{FG}$ (ii) `DeltaD

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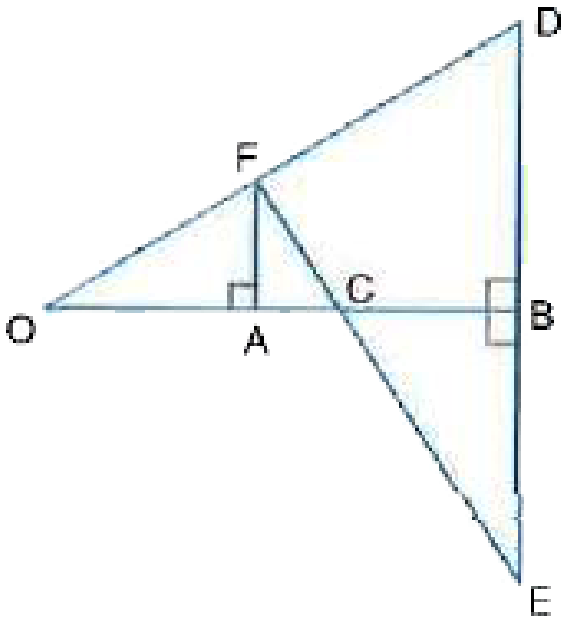
2. In the Fig. given below, OB is the perpendicular bisector of the line segment DE, $FA \perp OB$ and FE intersects OB at the point C. Prove

that $\frac{1}{OA}+\frac{1}{OB}=\frac{2}{OC}$



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3. In the adjoining figure, PQR, is a right triangle, right angled at Q. X and Y are the points on PQ and QR such that $PX:XQ=1:2$ and $QY:YR=2:1$. Prove that $9\left(PY^2+XR^2\right)=13PR^2$

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4. 14 In Fig. 6.21, PA, QB Rc and SD are all perpendiculars to a line l, AB 6 cm, Bc 9 cm, CD g cm and SP 36 om Find PO, QR an RS. Fig. 6.21

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5. If a perpendicular is drawn from the vertex containing the right angle of a right triangle to the hypotenuse then prove that the triangle on each side of the perpendicular are similar to each other and to the original triangle. Also, prove that the square of the perpendicular is equal to the product of the lengths of the two parts of the hypotenuse.

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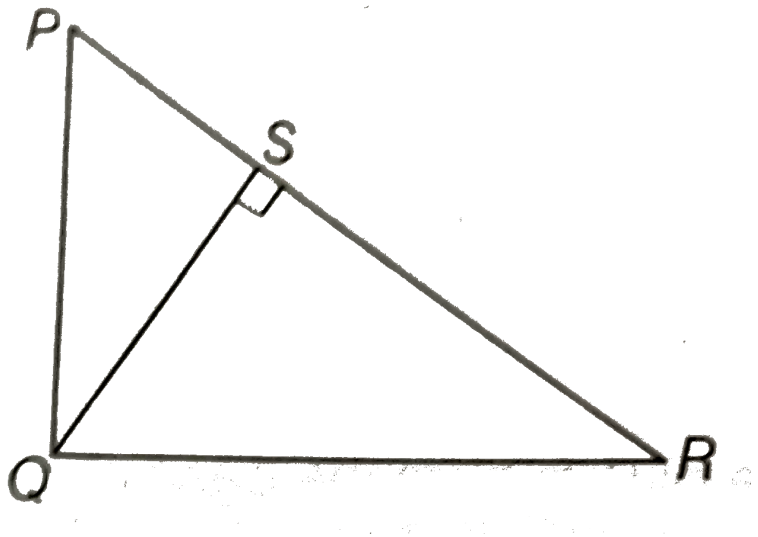
6. In given figure PQR is a right angled triangle, right angled at Q and QS $\perp$ PR. If PQ=6 cm and PS=4cm, then find QS, RS and QR.



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7. In fig.7.84, DEFG is a square and $\angle BAC = 90^{\circ}$. Prove that:

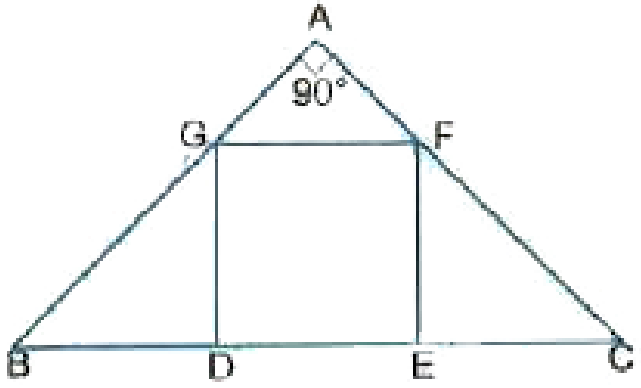

Fig. 7.84

(i) $\Delta AGF \sim \Delta DBG$ (ii) $\Delta AGF \sim \Delta EFC$ (iii) $\Delta DBG \sim \Delta EFC$ (iv) $DE^2 = BD \times EC$

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8. Prove that the area of the semicircle drawn on the hypotenuse of a right angled triangle is equal to the sum of the areas of the semicircles drawn on the other two sides of the triangle

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9. Ii ΔPQR, PD $\perp$ QR such that D lies on QR, if PQ=a,PR=b,QD=c and DR=d, then prove that (a+b)(a-b)=(c+d)(c-d).

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10. P and Q are the mid-points of the sides CA and CB respectively of a $\triangle ABC$, right angled at C, prove that.

(i) $4AQ^2 = 4AC^2 + BC^2$ (ii) $4BP^2 = 4BC^2 + AC^2$ (iii) $4\left(AQ^2 + BP^2\right)5AB^2$

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11. In Fig. 7 .85, $DE||BC$ and AD : DB = 5 : 4. Find $\frac{\text{Area}(\Delta DEF)}{\text{Area}(\Delta CFB)}$

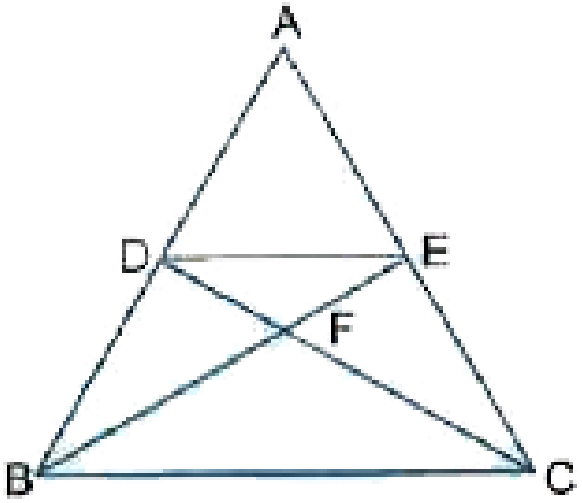

Fig. 7.85

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12. D and E are points on the sides AB and AC respectively of a ABC such that $DEBC$ and divides ABC into two parts, equal in area, find $\frac{BD}{AB}$.

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13. In Fig. 7.86, if D and E trisects BC. Prove that $8AE^2 = 3AC^2 + 5AD^2$.

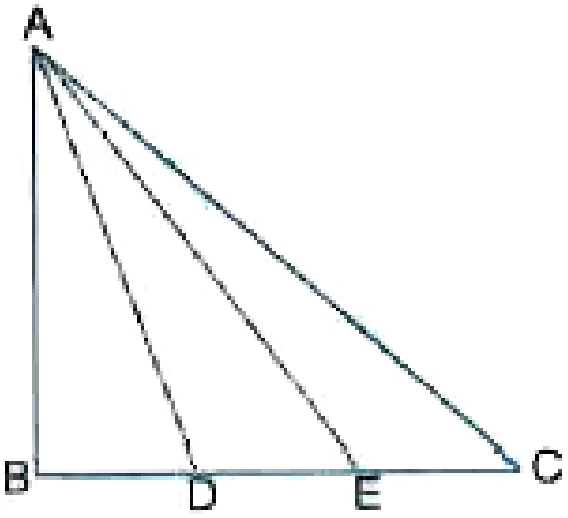

Fig. 7.86

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14. In a triangle ABC, $AC > AB$, D is the mid-point of BC and $AE \perp BC$. Prove that: (i) $AB^2 = AD^2 - BCDE + \frac{1}{4}BC^2$ (ii) $AB^2 + AC^2 = 2\,AD^2 + \frac{1}{2}BC^2$

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15. In an equilateral triangle with side a , prove that Altitude $= \frac{a\sqrt{3}}{2}$

(ii) Area $= \frac{\sqrt{3}}{4}a^2$

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Self Assessment Test

1. L and M are respectively the points on the sides DE and DF of a triangle DEF, such that DL = 4, $LE = \frac{4}{3}$, $DM = 6$ and $DF = 8$. Is

$Lm||EF$? Give reason.

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2. A vertical stick 20 m long casts a shadow 10m long on the ground. At the same time, a tower casts a shadow 50m long on the ground. The height of the tower is (a) 100m (b) 120m (c) 25m (d) 200m

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3. The lengths of the diagonals of a rhombus are 24 cm and 32 cm. Find the length of the side of the rhombus.

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4. XY is drawn parallel to the base BC of a ΔABC cutting AB at X and AC at Y. If AB= 4BX and YC = 2cm, then find AY.

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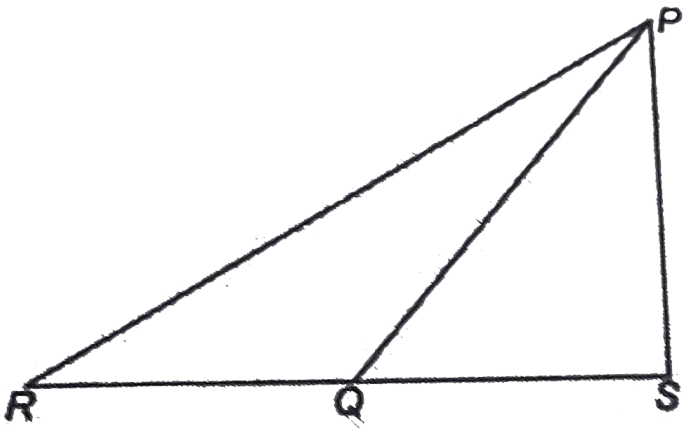
5. $\triangle ABC$ is an isosceles triangle with AC = BC. If $AB^2 = 2AC^2$. Prove that $\triangle ABC$ is a right triangle.



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6. A 5 m long ladder is placed leaning towards a vertical wall such that it reaches the wall such that it reaches the wall at a point 4 m high. If the foot of the ladder is moved 1.6 m towards the wall, then find the

distance by which the top of the ladder would slide upwards on teh wall.

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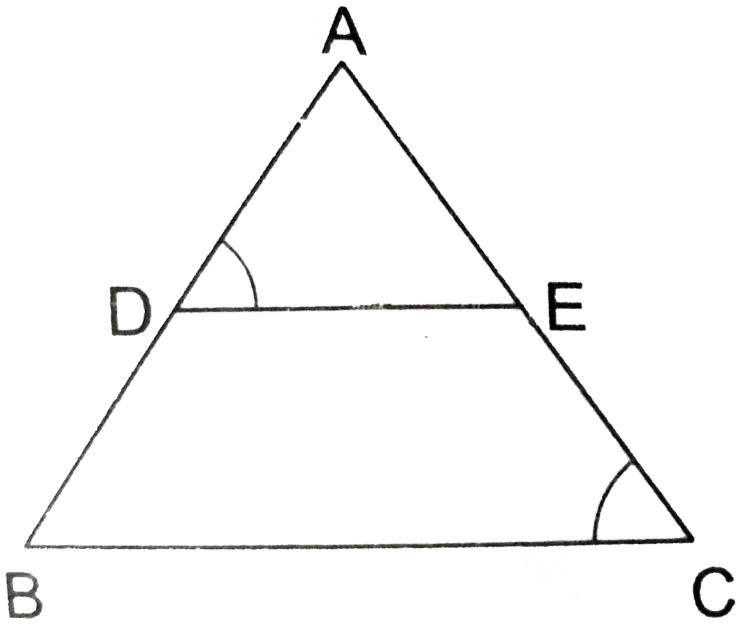
7. In the given figure, $\frac{AD}{DB} = \frac{AE}{EC}$ and $\angle ADE = \angle ACB$. Prove that ΔABC is an isosceles triangle.



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8. In Fig. 4.72, $ABCD$. If $OA = 3x - 19$, $OB = x - 4$, $OC = x - 3$ and $OD = 4$, find x . (FIGURE)

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9. ABC is a right triangle right-angled at C . Let $BC = a$, $CA = b$, $AB = c$ and let p be the length of perpendicular from C on AB , prove that (i) $cp = ab$ (ii) $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

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10. State and prove Basic Proportionality Theoram (Thales Theoram)

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