MATHS

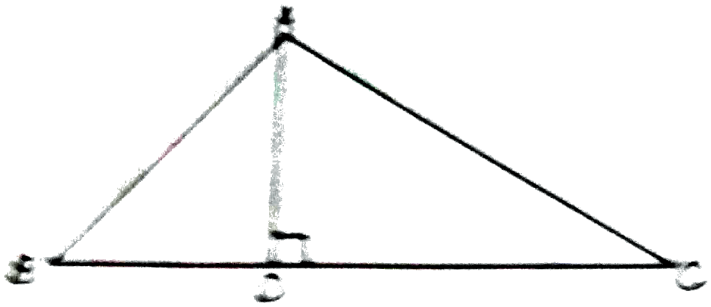
BOOKS - NCERT MATHS (ENGLISH)

TRIANGLES

Mcqs

1. In figure, if $\angle BAC = 90^\circ$ and $AD \perp BC$.

Then,



A. $BD.CD = BC^2$

B. $AB \cdot AC = BC^2$

C. $BD \cdot CD = AD^2$

D. $AB \cdot AC = AD^2$

Answer: C

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2. If the diagonals of a rhombus are 12cm and 16cm, find the length of each side.

A. 9 cm

B. 10 cm

C. 8 cm

D. 20 cm

Answer: B

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3. If $\Delta ABC \sim \Delta EDF$ and ΔABC is npot similar to ΔDEF, then which of the following is not true?

A. $BC \cdot EF = AC \cdot FD$

B. $AB \cdot EF = AC \cdot DE$

C. $BC \cdot DE = AB \cdot EF$

D. $BC \cdot DE = AB \cdot FD$

Answer:

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4. If in two ΔABC and ΔPQR, $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$, then

A. $\Delta PQR \sim \Delta CAB$

B. $\Delta PQR \sim \Delta ABC$

C. $\Delta CBA \sim \Delta PQR$

D. $\Delta BCA \sim \Delta PQR$

Answer: A

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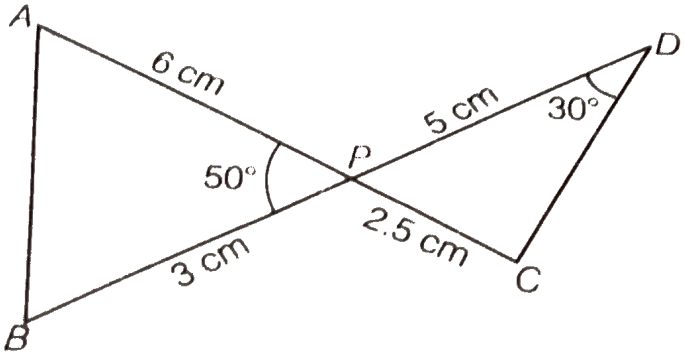
5. In figure, two line segments AC and BD intersects each other at the point P such that PA = 6 cm, PB = 3 cm, PC = 2.5 cm, PD=5 cm, $\angle APB = 50^\circ$ and $\angle CDP = 30^\circ$. Then, $\angle PBA$ is equal to



A. 50°

B. 30°

C. 60°

D. 100°

Answer: D

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6. In ΔDEF and ΔPQR, it is given that $\angle D = \angle Q$ and $\angle R = \angle E$, then which of the following is not true?

A. $\frac{EF}{PR} = \frac{DF}{PQ}$

B. $\frac{DE}{PQ} = \frac{EF}{RP}$

C. $\frac{DE}{QR} = \frac{DF}{PQ}$

D. $\frac{EF}{RP} = \frac{DE}{QR}$

Answer: B

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7. In ΔABC and ΔDEF, $\angle B = \angle E$, $\angle F = \angle C$ and AB=3DE. Then, the two triangles are

A. congruent but not similar

B. similar but not congruent

C. neither congruent nor similar

D. congruent as well as similar

Answer: B

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

A. $\frac{9}{1}$

B. $\frac{3}{1}$

C. $\frac{1}{3}$

D. $\frac{1}{9}$

Answer: A

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9. If $\Delta ABC \sim \Delta DFE, \angle A = 30, \angle C = 50^\circ$, AB=5 cm, AC=8 cm and DF=7.5 cm. Then, which of the following is true?

A. $DE = 12cm, \angle F = 50^\circ$

B. $DE = 12cm, \angle F = 100^\circ$

C. $EF = 12cm, \angle D = 100^\circ$

D. $EF = 12cm, \angle D = 30^\circ$

Answer: B

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10. If in ΔABC and ΔDEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when

A. $\angle B = \angle E$

B. $\angle A = \angle D$

C. $\angle B = \angle D$

D. $\angle A = \angle F$

Answer: C

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11. If $\Delta ABC \sim \Delta QRP$, $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{9}{4}$, AB=18 cm and BC=15 cm, then PR is equal to

A. 10 cm

B. 12 cm

C. $\frac{20}{3}$ cm

D. 8 cm

Answer: A

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12. If S is a point on side PQ of a ΔPQR such that PS=QS=RS, then

A. $PR \cdot QR = RS^2$

B. $QS^2 + RS^2 = QR^2$

C. $PR^2 + QR^2 = PQ^2$

D. $PS^2 + RS^2 = PR^2$

Answer: C

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Very Short Answer Typw Questions

1. Is the triangle with sides 25 cm, 5 cm and 24 cm a right triangle? Give reason for your answer.

A. No, not satisfy pythagoras theorem

B. Yes

C. not sure

D. No, not satisfied Thales Theorem

Answer: A

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2. 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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3. 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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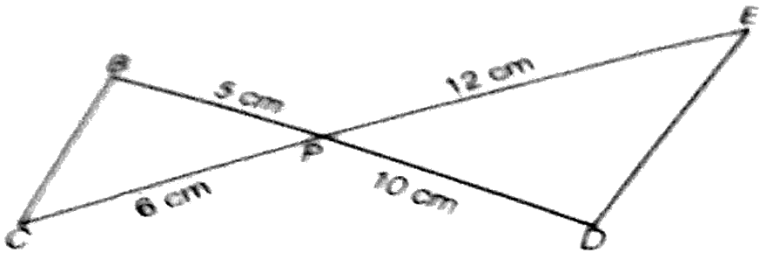
4. In figure BD and CE intersect each other at the point P. Is $\Delta PBC \sim \Delta PDE$? Why?



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

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7. 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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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. The ratio of the corresponding altitudes of two similar triangles is $\frac{3}{5}$. Is it correct to say that ratio of their areas is $\frac{6}{5}$? Why?

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10. D is a point on side QR of ΔPQR such that PD $\perp$ QR. Will it be correct to say that $\Delta PQD \sim \Delta RPD$? Why?

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11. In figure, if $\angle D = \angle C$, then it is true that $\Delta ADE \sim \Delta ACB$? Why?

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12. Is it true to say that, if in two triangles, an angle of one triangle is equal to an angle of another triangle and two sides of one triangle are proportional to the two sides of the other triangle, then the triangles are similar? Give reason for your answer.

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Short Answer Type Questions

1. In PQR, $QM \perp PR$ and $PR^2 - PQ^2 = QR^2$. Prove that $QM^2 = PM \times MR$

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2. Find the value of x for which DE||AB in given figure.

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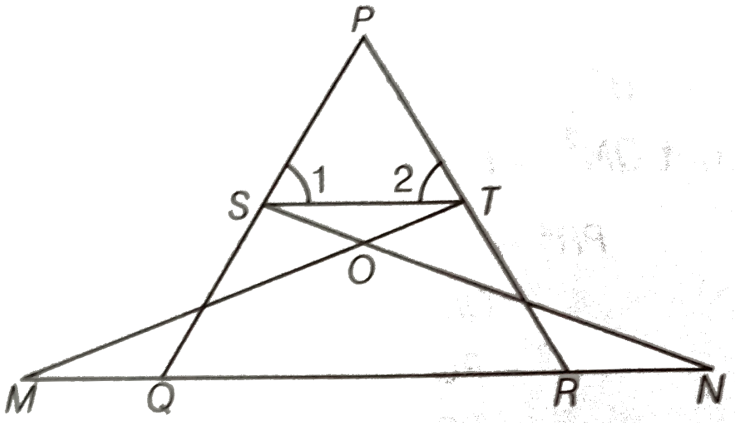
3. In figure, if $\angle 1 = \angle 2$ and $\Delta NSQ = \Delta MTR$, then prove that $\Delta PTS \sim \Delta PRQ$.



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4. Diagonals of a trapezium PQRS intersect each other at the point 0 ,PQ||RS and PQ=3 RS. Find the ratio of the areas of ΔPOQ and ΔROS.

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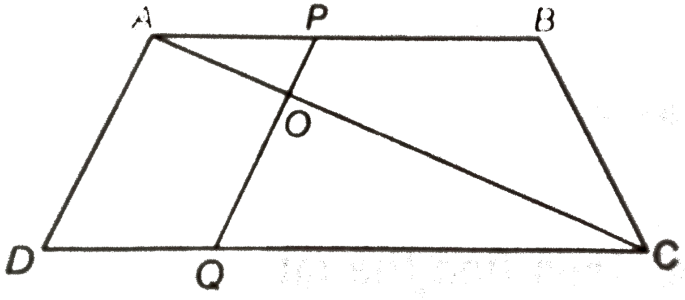
5. In figure , if $Ab||DC$ and AC, PQ interrest each other at the point 0. Prove that OA.CQ=OC.AP.



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6. Find the altitude of an equilateral triangle of side 8 cm.

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7. If $\Delta ABC \sim \Delta DEF$, AB=4cm, DE=6, EF=9 cm and FD=12 cm, then find the perimeter of ΔABC.

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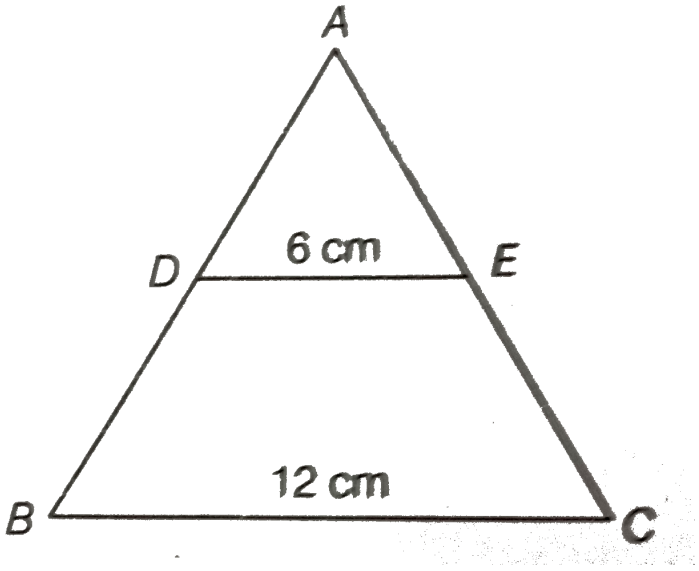
8. In figure, if DE||BC, then find the ratio of ar (ΔADE) and ar(DECB).



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9. ABCD is a trapezium in which AB||DC and P,Q are points on AD and BC respectively, such that PQ||DC, if PD=18 cm, BQ=35 cm and QC=15 cm. Find AD.

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10. Corresponding sides of two triangles are in the ratio $2:3$. If the area of the smaller triangle is $48\,cm^2$, determine the area of the larger triangle.

A. $106cm^2$

B. $110cm^2$

C. $108cm^2$

D. $104cm^2$

Answer: C

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11. In a ΔPQR, N is a point on PR, such that QN $\perp$ PR. If PN $\cdot$ NR=QN^2, then prove that $\angle PQR = 90^\circ$.

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12. The areas of two similar triangles are $36\ cm^2$ and $100\ cm^2$. If the length of a side of the smaller triangle in 3 cm, find the length of the corresponding side of the larger triangle.

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13. In given figure, if $\angle ACB = \angle CDA, AC = 8cm$ and AD=3 cm, then find BD.

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14. 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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15. Foot of a 10 m long ladder leaning against a verticle wall is 6 m away from the base of the wall. Find the height of the point on the wall where the top of the ladder reaches.

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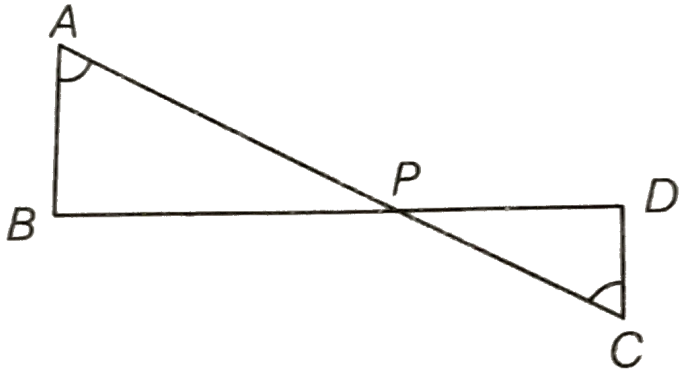
Long Answer Type Questions

1. In given figure, if $\angle A = \angle C$, AB= 6 cm, BP = 15 cm, AP = 12 cm and CP= 4 cm, then find the lengths of PD and CD.



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2. It is given that $\Delta ABC \sim \Delta EDF$ such that AB=5 cm, AC=7 cm, DF= 15 cm and DE = 12 cm. Find the lengths of the remaining sides of the triangles.

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3. `If a line is drawn to one side of a triangle to intersect the other two sides in distinct points, prove that the other two sides are divided in the same ratio.

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4. In the given figures, if PQRS is a parallelogram and $AB||PS$, then prove that $OC||SR$.

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5. 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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6. 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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7. A flag pole 18 m high casts a shadow 9.6 m long. Find the distance of the top of the pole from the far end of the shadow.

A. 21.4m

B. 20.4m

C. 30.4m

D. 40.4m

Answer: B

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8. 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.

A. $8m$

B. $7m$

C. $6m$

D. $9m$

Answer: D

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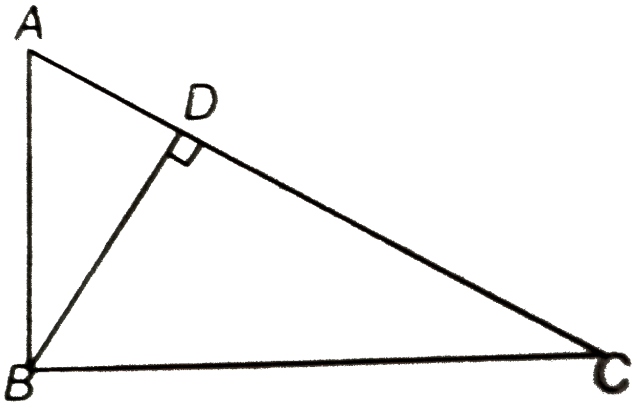
9. In given figure, ABC is a triangle right angled at B and BD $\perp$ AC. If AD=4 cm and CD= 5 cm, then find BD and AB.



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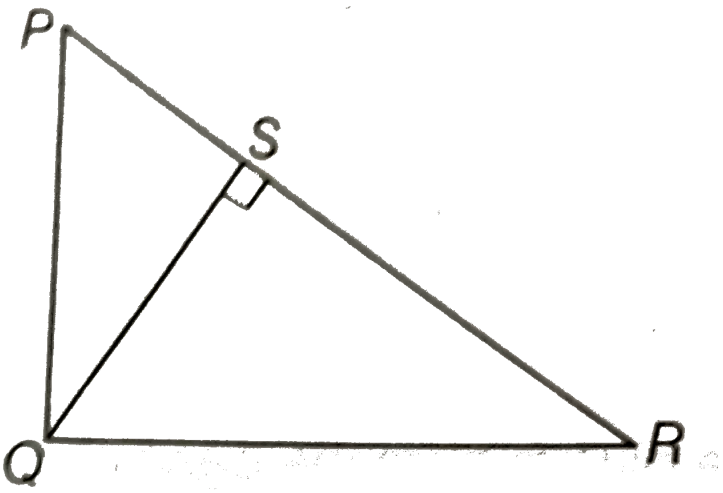
10. In given figure PQR is a right angled triangle, right angled at Q and QS $\perp$ PR. If PQ=6 cm and

PS=4cm, then find QS, RS and QR.



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11. 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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12. In a quadrilateral ABCD, $\angle A + \angle D = 90^\circ$.

Prove that

$$AC^2 + BD^2 = AD^2 + BC^2$$

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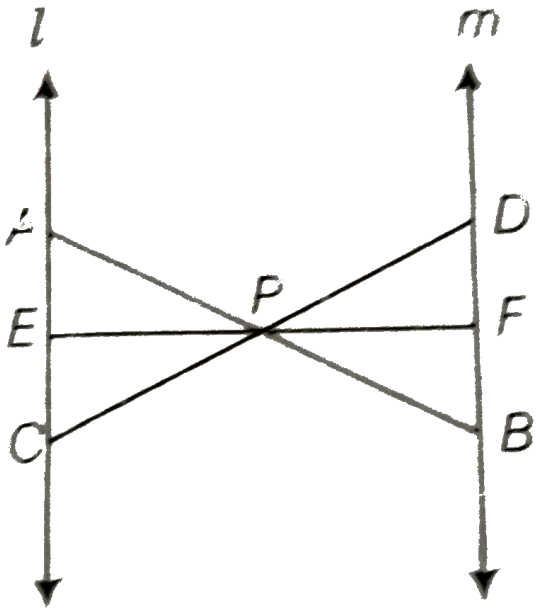
13. In given figure,l||m and liner segments AB, CD and EF are concurrent at point P. Prove that

$$\frac{AE}{BF} = \frac{AC}{BD} = \frac{CE}{FD}$$



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14. 14 In Fig. 6.21, PA, QB Rc and SD are all perpendiculars to a line l, AB 6 cm, Bc 9 cm, CD 12

cm and SP 36 cm Find PO, QR an RS. Fig. 6.21

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15. O is the point of intersection of the diagonals AC and BD of a trapezium ABCD with AB||DC. Through O , aline segment PQ is drawn parallel to AB meeting AD in P and BC in Q, prove that PO=QO.

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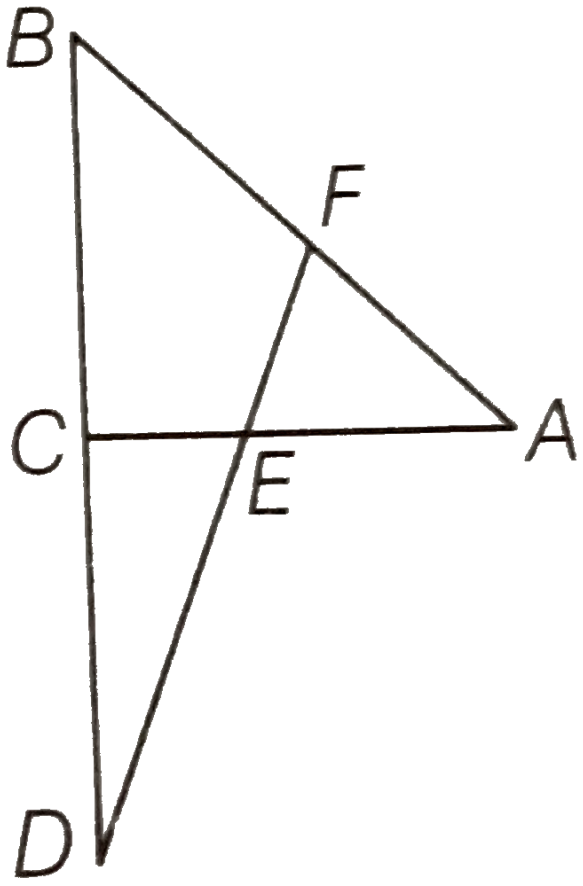
16. In figure, line segment DF intersects the side AC of a ΔABC at the point E such that E is the mid-point of CA and $\angle AEF = \angle AFE$. Prove that $\frac{BD}{CD} = \frac{BF}{CE}$



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17. 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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18. Equilateral triangles are drawn on the sides of a right triangle. Show that the area of the triangle

on the hypotenuse is equal to the sum of the areas of triangles on the other two sides.

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