



MATHS

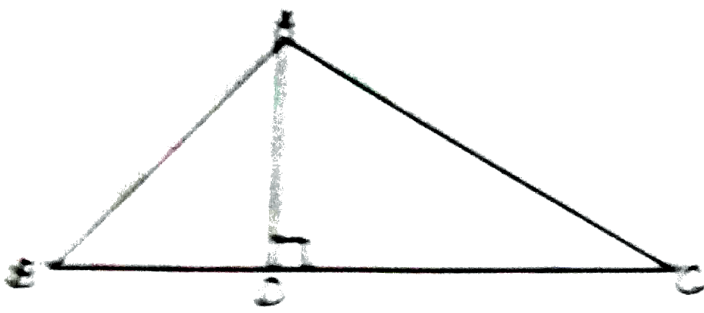
BOOKS - NCERT EXEMPLAR MATHS (HINGLISH)

TRIANGLES

Triangles

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

Then,



A. $BD \cdot CD = BC^2$

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 $\triangle ABC \sim \triangle EDF$ and $\triangle ABC$ is not similar to $\triangle DEF$, 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: C



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4. If in two $\triangle ABC$ and $\triangle PQR$,

$$\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}, \text{ then}$$

A. $\triangle PQR \sim \triangle CAB$

B. $\triangle PQR \sim \triangle ABC$

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

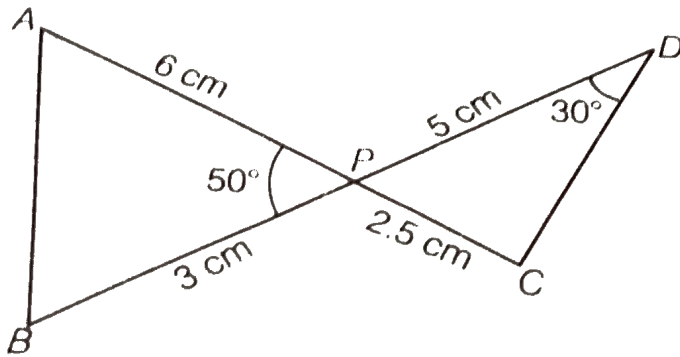
D. $\triangle BCA \sim \triangle PQR$

Answer: A



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5. In figure, two line segments AC and BD intersect 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 $\triangle DEF$ and $\triangle PQR$, 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 $\triangle ABC$ and $\triangle DEF$, $\angle B = \angle E$, $\angle F = \angle C$
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 $\triangle ABC \sim \triangle DFE$, $\angle A = 30^\circ$, $\angle C = 50^\circ$, $AB = 5$ cm, $AC = 8$ cm and $DF = 7.5$ cm. Then, which of the following is true?

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

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

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

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

Answer: B



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10. If in $\triangle ABC$ and $\triangle DEF$, $\frac{AB}{DE} = \frac{BC}{FD}$, 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. $10cm$

B. $12cm$

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

D. $8cm$

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



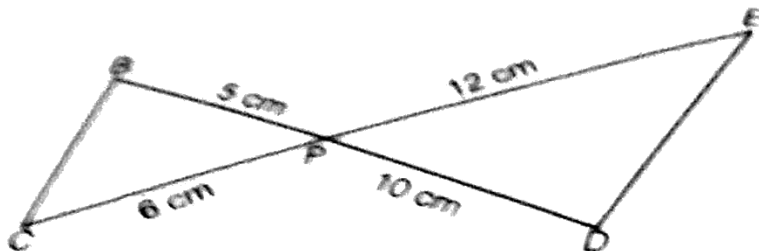
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15. A and B are respectively the points on the sides PQ and PR of a $\triangle PQR$ such that PQ = 12.5 cm, PA = 5 cm, BR = 6 cm and PB = 4 cm. Is $AB \parallel QR$? Give reason for your answer.



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16. In figure BD and CE intersect each other at the point P. Is $\triangle PBC \sim \triangle PDE$? Why?



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17. In $\triangle PQR$ and $\triangle MST$,
 $\angle P = 55^\circ$, $\angle Q = 25^\circ$, $\angle M = 100^\circ$ and $\angle S = 25^\circ$.
Is $\triangle PQR \sim \triangle MST$? Why?

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



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19. 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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20. 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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21. 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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22. D is a point on side QR of $\triangle PQR$ such that $PD \perp QR$. Will it be correct to say that $\triangle PQD \sim \triangle RPD$? Why?



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



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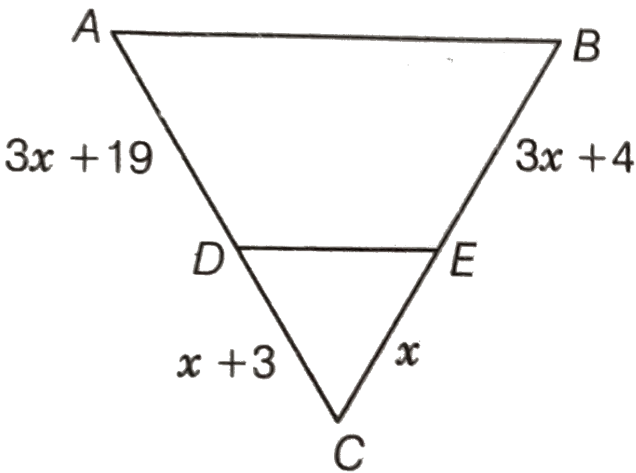
24. Is it true to say that, if in two triangles, an angle of one triangle is equal to an angle of another triangle and two sides of one triangle are proportional to the two sides of the other triangle, then the triangles are similar? Give reason for your answer.



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

26. Find the value of x for which $DE \parallel AB$ in given figure.



A. 1

B. 3

C. 4

D. 2

Answer: D



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



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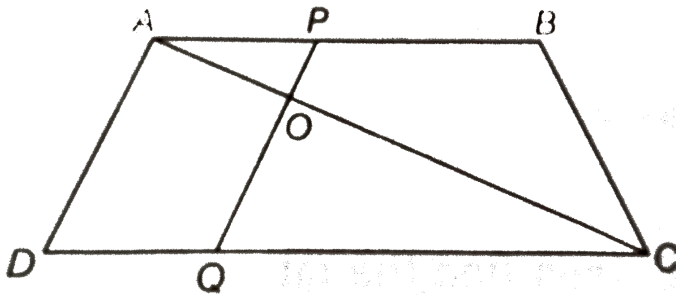
28. Diagonals of a trapezium PQRS intersect each other at the point O, $PQ \parallel RS$ and $PQ = 3 RS$. Find the

ratio of the areas of ΔPOQ and ΔROS .



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29. In figure , if $AB \parallel DC$ and AC, PQ intersect each other at the point O . Prove that $OA.CQ = OC.AP$.



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

A. $5\sqrt{3}$

B. $3\sqrt{3}$

C. $4\sqrt{3}$

D. $2\sqrt{3}$

Answer: C

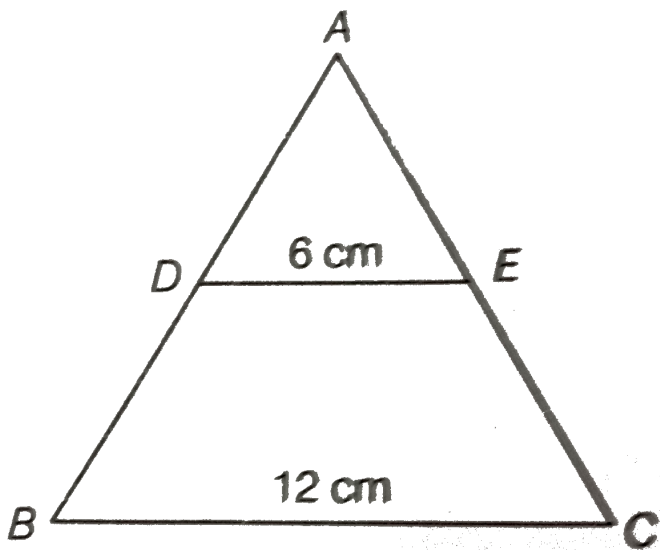


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31. If $\triangle ABC \sim \triangle DEF$, $AB=4\text{cm}$, $DE=6$, $EF=9$ cm and $FD=12$ cm, then find the perimeter of $\triangle ABC$.

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32. In figure, if $DE \parallel BC$, then find the ratio of ar ($\triangle ADE$) and ar(DECB).



A. 1:3

B. 1:2

C. 2:5

D. 3:5

Answer: A



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33. ABCD is a trapezium in which $AB \parallel DC$ and P,Q are points on AD and BC respectively, such that

$PQ \parallel DC$, if $PD=18$ cm, $BQ=35$ cm and $QC=15$ cm. Find

AD.



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34. 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. 106 cm^2

B. 110 cm^2

C. 108 cm^2

D. 104cm^2

Answer: C



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



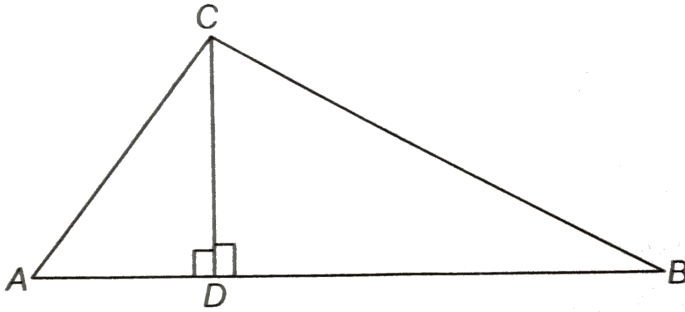
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37. In given figure, if $\angle ACB = \angle CDA$, $AC = 8\text{cm}$ and $AD = 3\text{cm}$,

then

find

BD.



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38. A 15 high tower casts a shadow 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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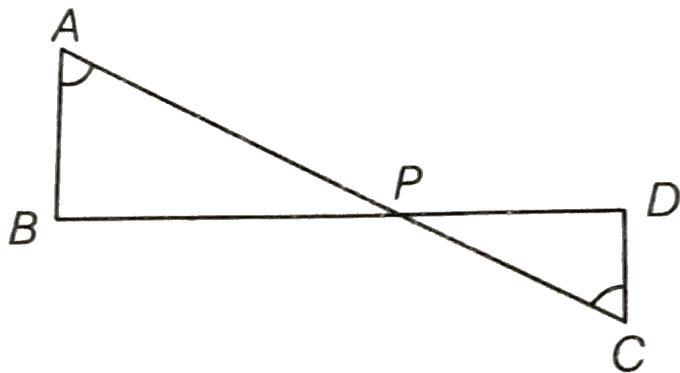
39. Foot of a 10 m long ladder leaning against a verticle wall is 6 m away from the base of the wall. Find the height of the point on the wall where the top of the ladder reaches.



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40. 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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41. It is given that $\triangle ABC \sim \triangle EDF$ 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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42. 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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43. In the given figures, if PQRS is a parallelogram and $AB \parallel PS$, then prove that $OC \parallel SR$.



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44. 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 the wall.



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45. 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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46. 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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47. A street light bulb is fixed on a pole 6 m above the level of the street. If a woman 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

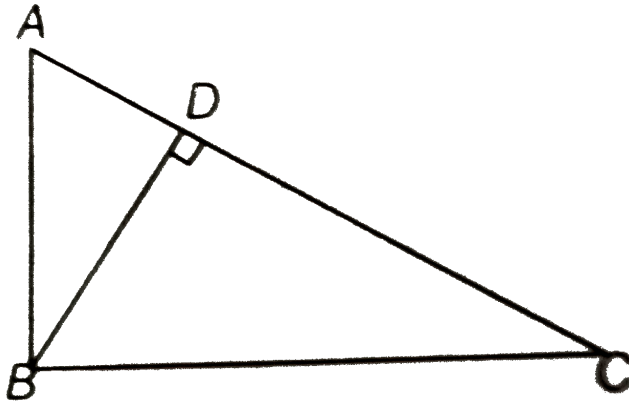
Answer: D



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

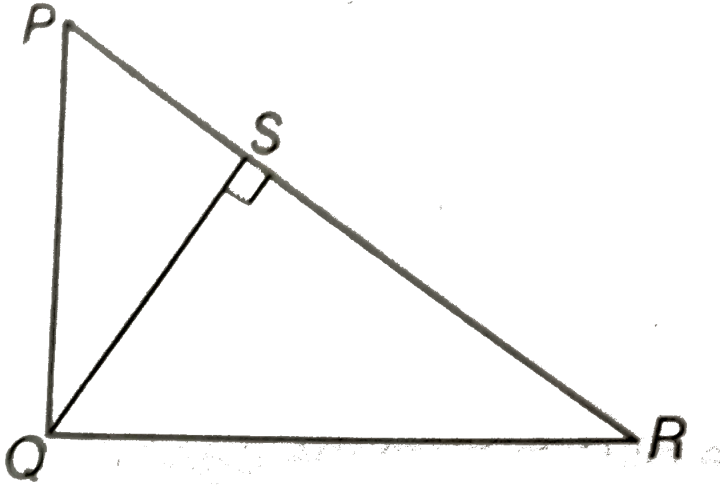
find BD and AB.



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49. 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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50. ii $\triangle PQR$, $PD \perp QR$ 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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51. In a quadrilateral ABCD, $\angle A + \angle D = 90^\circ$.

Prove that

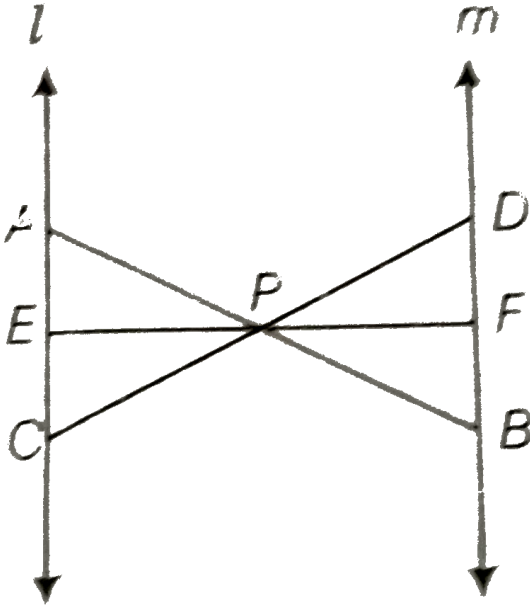
$$AC^2 + BD^2 = AD^2 + BC^2$$



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52. In given figure, $l \parallel m$ and line 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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53. 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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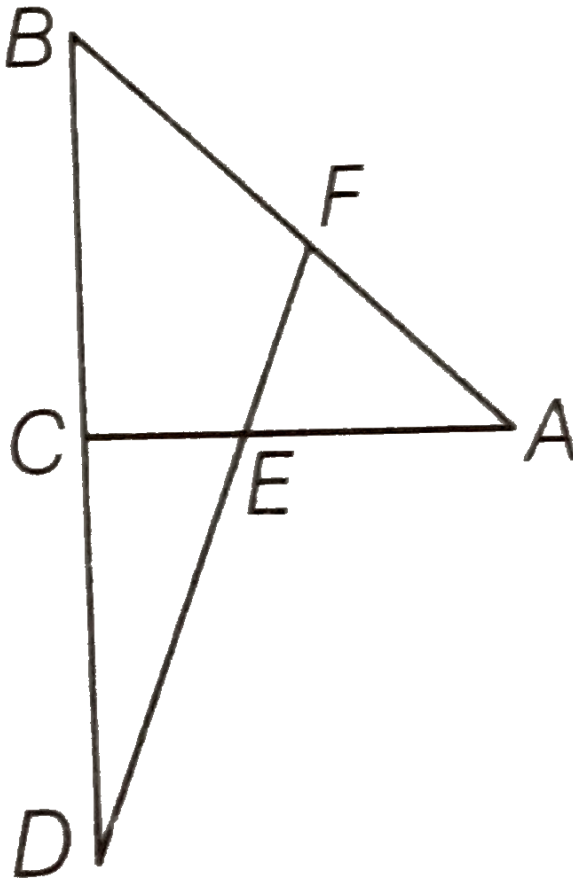
54. O is the point of intersection of the diagonals AC and BD of a trapezium ABCD with $AB \parallel DC$. Through O , a line segment PQ is drawn parallel to AB meeting AD in P and BC in Q, prove that $PO=QO$.



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55. In figure, line segment DF intersects the side AC of a $\triangle ABC$ 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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56. 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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57. 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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