MATHS

BOOKS - AGRAWAL PUBLICATION

TRIANGLES

Example

1. In the given figure, MN|| BC and AM : MB = 1 3, then $\frac{ar(\Delta AMN)}{ar(\triangle ABC)}$=.....

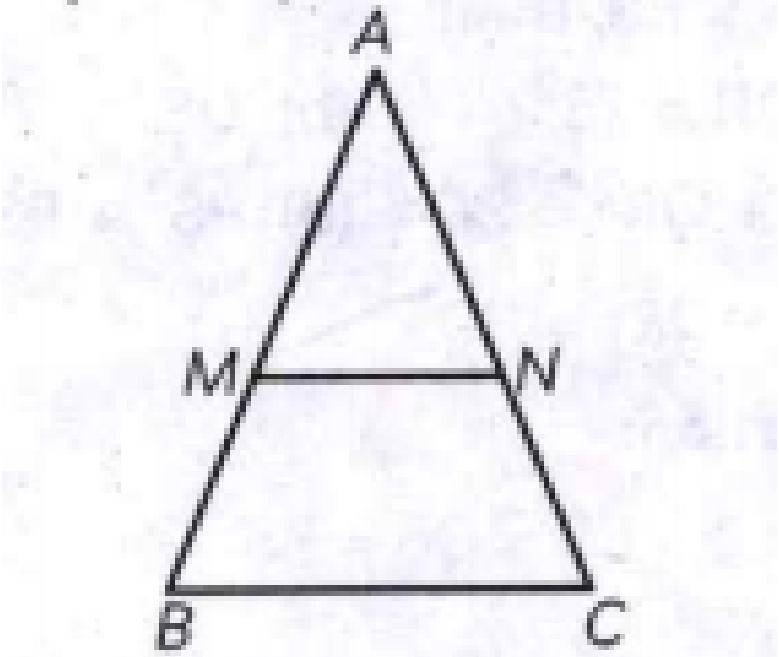


Fig 1.

Watch Video Solution

2. In a triangle ABC, AB=6 $\sqrt{3}$ cm, AC = 12 cm and BC =6cm . Then measure of $\angle B$ is equal to

:

एक त्रिभुज ABC में, AB=6 $\sqrt{3}$ cm, AC = 12 cm और BC = 6cm| $\angle B$ का माप ज्ञात करे

Watch Video Solution

3. Two triangles are similar if their corresponding sides are.....

Watch Video Solution

4. A ladder 10 m long reaches a window 8 m above the ground. The distance of the foot of the ladder from the base of the wall is.....m.

Watch Video Solution

5. If $\triangle ABC$ is an equilateral triangle of side 2a, then length of one of its altitude is.....

Watch Video Solution

6. The perimeter of two similar triangles $\triangle ABC$ and $\triangle PQR$ are 35 cm and 45 cm respectively, then the ratio of the areas of the two triangles is.....

Watch Video Solution

7. The length of an altitude in an equilateral triangle of side 'a' cm is.....

Watch Video Solution

8. If areas of two similar triangles are equal, then these triangles are.....

Watch Video Solution

9. Diagonals of a parallelogram separate it into two triangles of.....

Watch Video Solution

10. If S is a point on side PQ of a $\triangle PQR$ such that PS= QS= RS, then: $PR^2 + QR^2$=.....

Watch Video Solution

11. BC and BDE are two equilateral triangles such that D is the mid point of BC. Find the ratio of the areas of triangle ABC and BDE.....

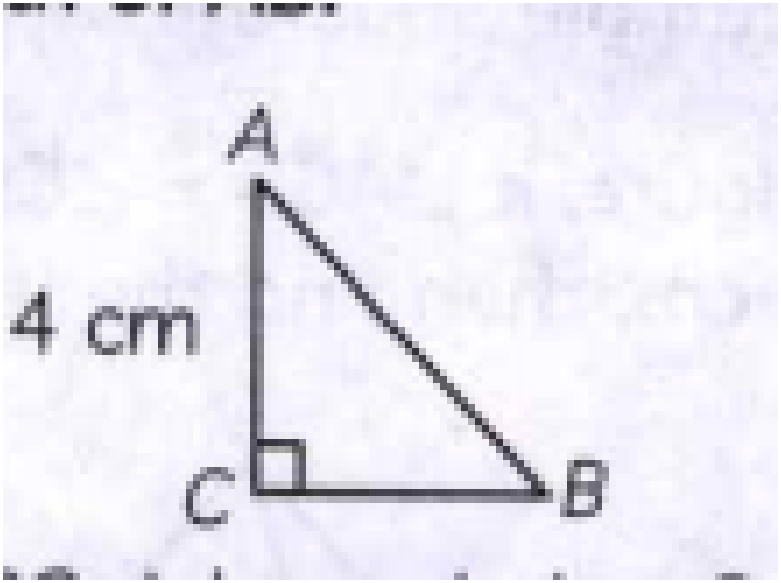
Watch Video Solution

12. 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?

Watch Video Solution

13. In the givne figure $\triangle ABC$ is an isosceles triangle right angled at C with AC = 4 cm. find

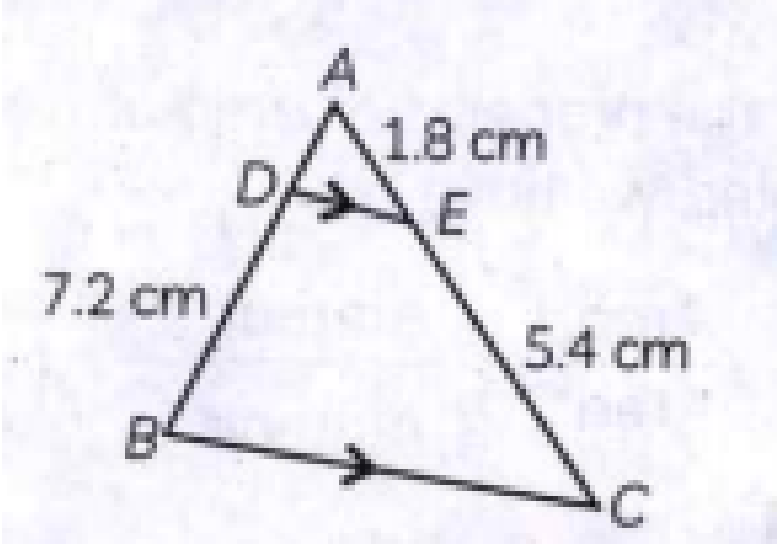
the length of AB.



Watch Video Solution

14. In the given figure, DE||BC. Find the length of side AD, given that AE = 1.8 cm, BD = 7.2 cm

and CE = 5.4 cm.



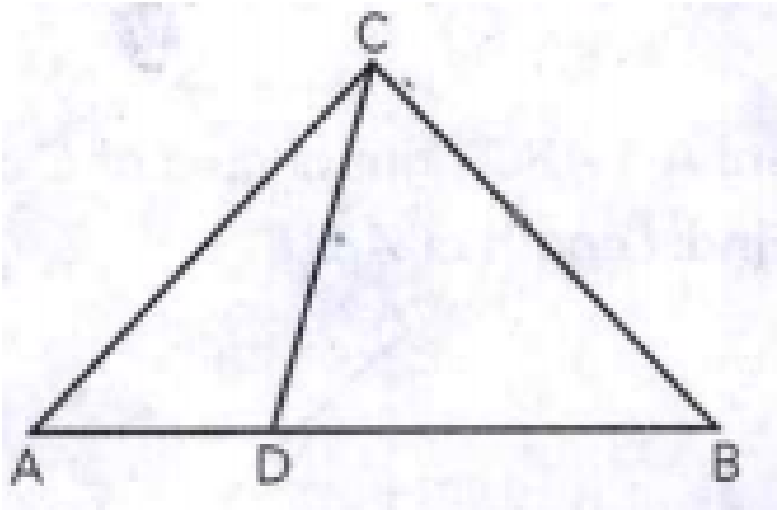
Watch Video Solution

15. Is the following statement true?Why?

"Two quadrilaterals are similar, if their corrresponding angles are equal".

Watch Video Solution

16. In the figure, if $\angle ACB = \angle CDA$, AC = 6 cm and AD = 3 cm, then find the length of AB.



Watch Video Solution

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

Watch Video Solution

18. For a rhombus ABCD prove the following:

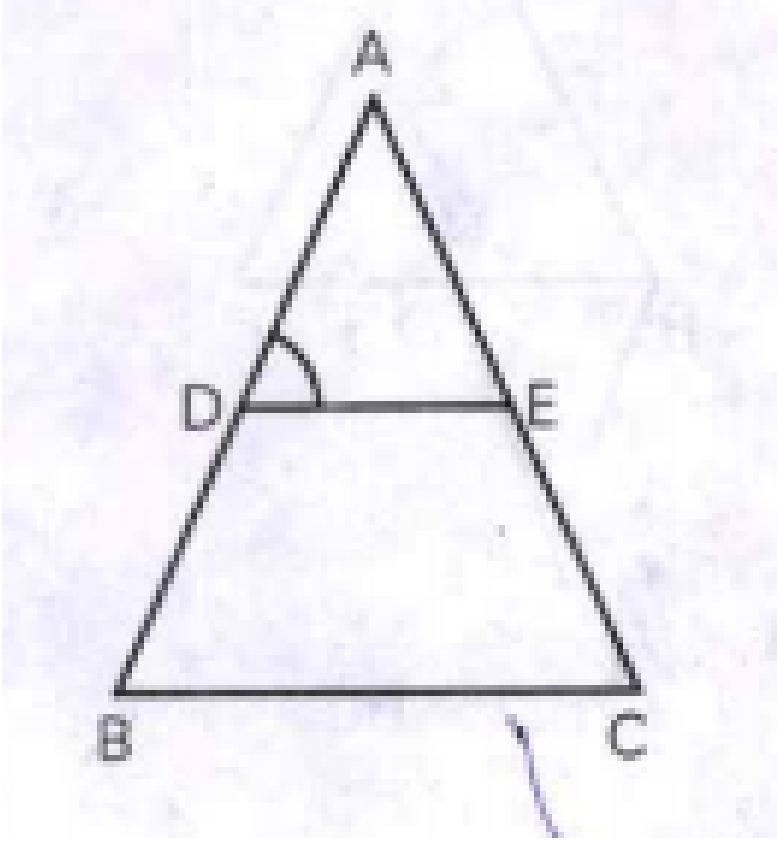
$4AB^2 = AC^2 + BD^2.$

Watch Video Solution

19. The area of two similar triangles are 25 sq. m and 121 sq. cm. find the ratio of their corresponding sides.

Watch Video Solution

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



Watch Video Solution

21. A and B are respectivley the points on the sides PQ and PR of a $\triangle PQR$ such that PQ =

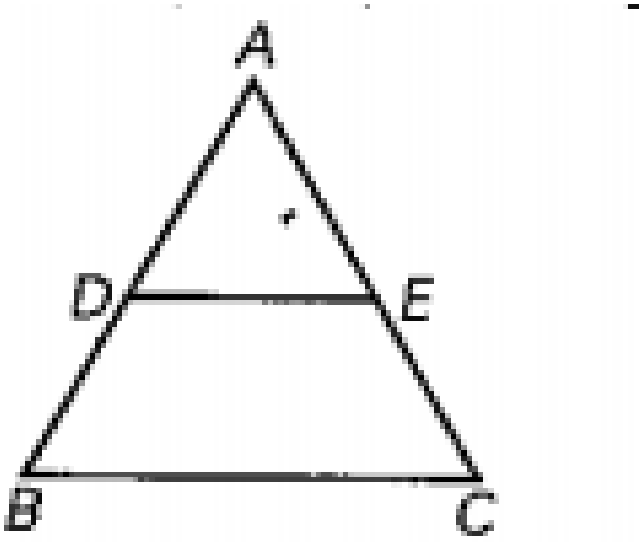
12.5 cm, PA = 5 cm, BR = 6 cm and PB = 4 cm is AB||QR? Give reasons for your answer.

Watch Video Solution

22. ΔABC and ΔDEF are similar and their areas be respectively $64cm^2$ and $121cm^2$. If $EF = 15.4cm$, BC is.

Watch Video Solution

23. In the given figure $DE \mid\mid BC$, AD = 1 cm and BD = 2 cm. what is the ratio of the area ($\triangle ABC$) to the area ($\triangle ADE$)?



Watch Video Solution

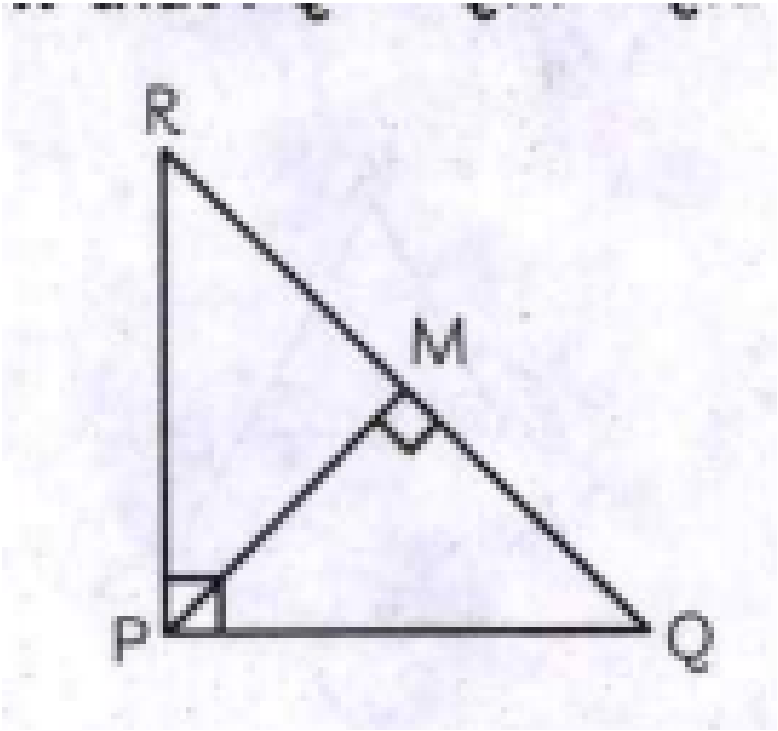
24. Is the triangle with sides 25 cm, 5 cm and 24 cm a right triangle? Give reasons for your answer.

Watch Video Solution

25. The perimeter of two similar triangles are 30cm and 20cm respectively. If one side of the first triangle is 9 cm. Determine the corresponding side of the second triangle.

Watch Video Solution

26. In the figure, $\triangle PQR$ is right angled at P. M is point on QR such that PM is perpendicular to QR. Show that $PQ^2 = QM \times QR$.



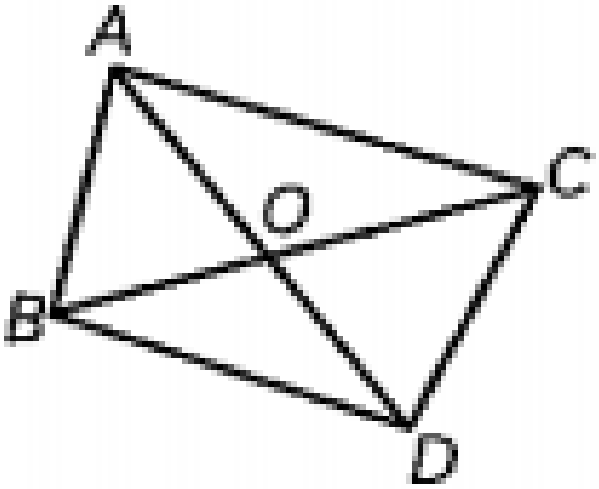
Watch Video Solution

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

Watch Video Solution

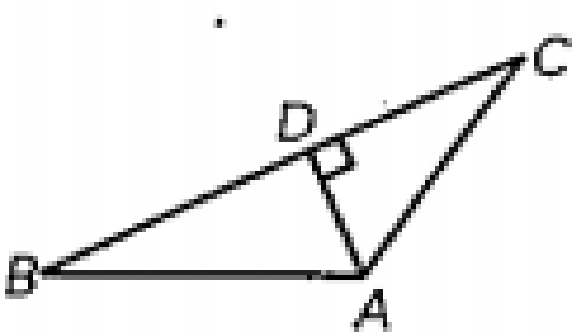
28. In the figure, ABC and DBC are two triangles on the same base BC. If AD intersects BC at O, show that:

$$\frac{area(\Delta ABC)}{area(\Delta DBC)} = \frac{AO}{DO}$$



Watch Video Solution

29. If $AD \perp BC$, then prove that $AB^2 + CD^2 = BD^2 + AC^2$.



Watch Video Solution

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

Watch Video Solution

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

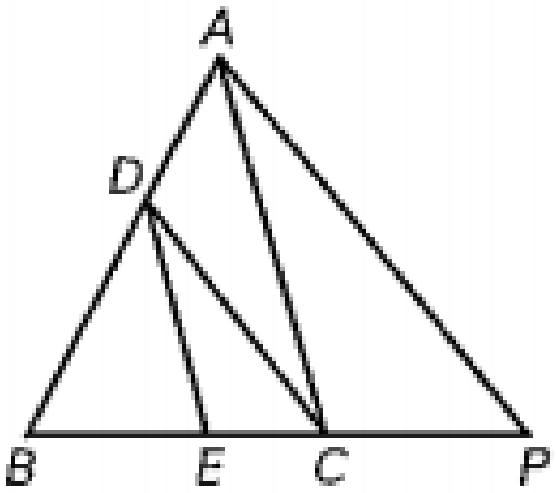
Watch Video Solution

32. 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?

Watch Video Solution

33. In the figure, $DE \mid\mid AC$ and $DC \mid\mid AP$.

Prove that $\frac{BE}{EC} = \frac{BC}{CP}$



Watch Video Solution

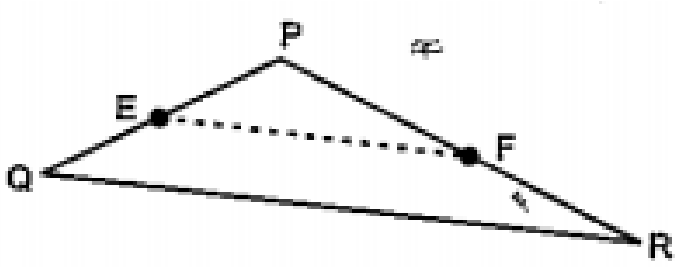
34. Is it true to say that if in two triangles, an angle of one triangle is equal to an angle of another triangle and two sides of one triangle are proportional to the two sides of the other triangle, then the triangles are similar?Give reason for your answer.

Watch Video Solution

35. 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.

Watch Video Solution

36. Kitchen garden of Ms. Sanjana is in the form of a triangle as shown. She wants to divide it in two parts, one triangle and one trapezium.



She takes PE = 4 m, QE = 4.5m PF = 8 m and RF = 9 m.

Is $EF \parallel QR$?Justify your answer.

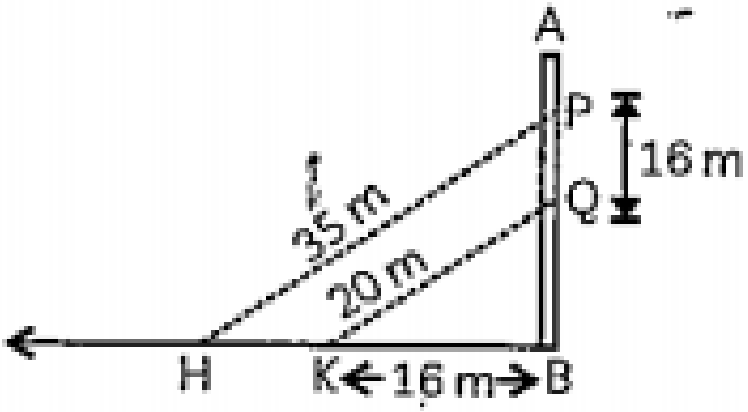
Watch Video Solution

37. Two spotlights, P and Q are mounted on a verticl pole AB as shown.

Light beams from P and Q shine to two points on the ground,

H and K respectively, given that PQ = 16 m, KB = 16 m

PH = 35 m and QK = 20m find



BQ, the height above the ground at which the spotlight Q is mounted.

Watch Video Solution

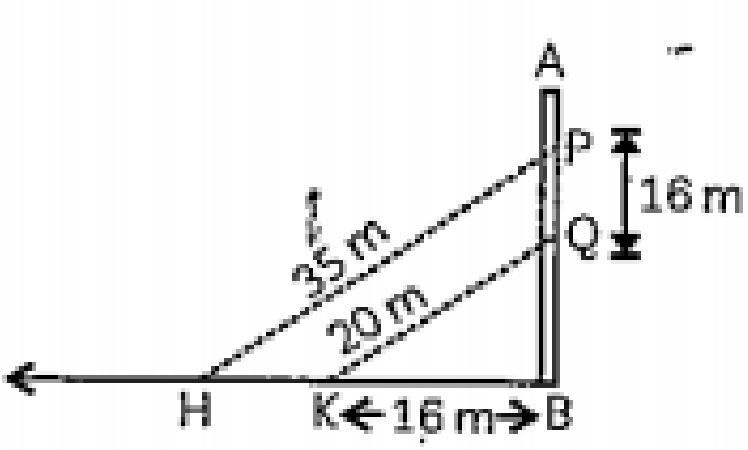
38. Two spotlights, P and Q are mounted on a verticl pole AB as shown.

Light beams from P and Q shine to two points

on the ground,

H and K respectively, given that PQ = 16 m, KB = 16 m

PH = 35 m and QK = 20m find



HK, the distance between the projections of the light beams.

Watch Video Solution

39. $\triangle ABC \sim \triangle DEF$ such that DE =3 cm, EF = 2 cm, DF = 2.5 cm and BC = 4 cm, find the perimeter of $\triangle ABC$

Watch Video Solution

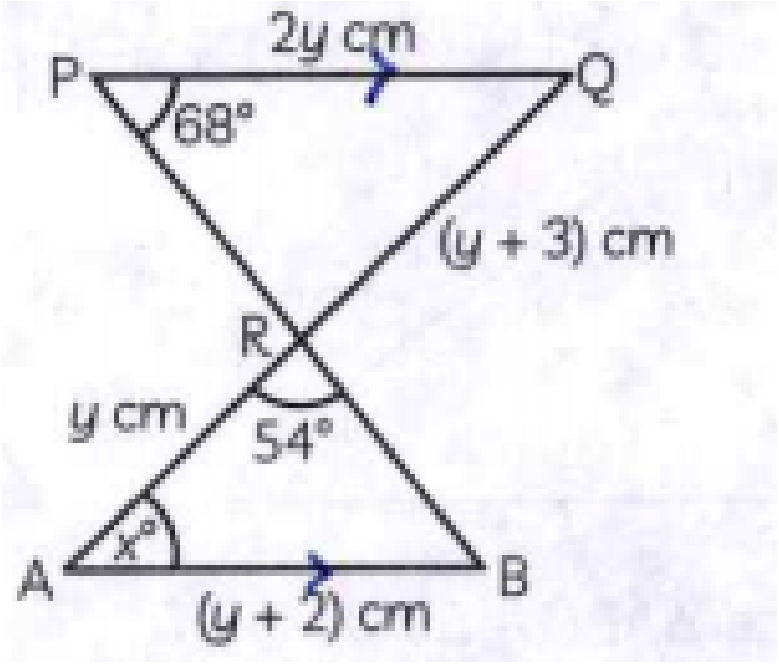
40. P and Q are the points on the sides DE and DF of a triangle DEF such that DP = 5 cm, DE = 15 cm, DQ = 6 cm and QF = 18 cm. Is $PQ \| EF$?Give reasons for your answer.

Watch Video Solution

41. Given that $\triangle PQR$ is similar to $\triangle BAR$,

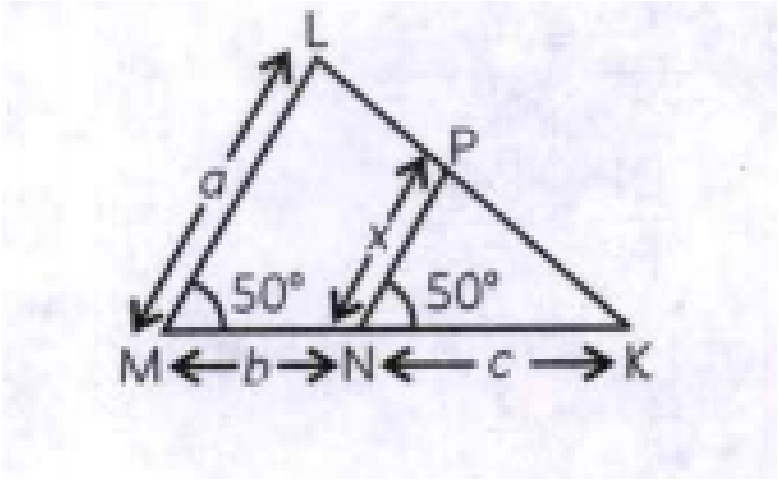
find:

the value of y,



Watch Video Solution

42. In the given figure, find the value of x in terms of a,b and c.



Watch Video Solution

43. R and S are points on the sides DE and EF respectively of a $\triangle DEF$ such that ER = 5 cm,

RD = 2.5 cm, SE = 1.5 cm and FS = 3.5 cm. Find whether $RS \mid\mid DF$ or not.

Watch Video Solution

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

Watch Video Solution

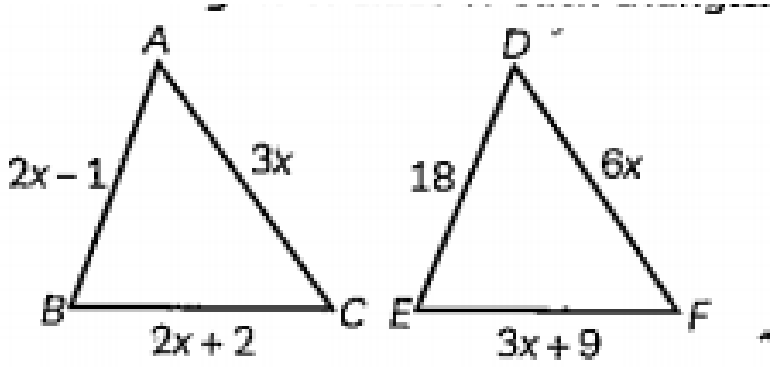
45. Areas of two similar triangles are $36cm^2$ and $100cm^2$. If the length of a side of the larger triangle is 20cm. Find the length of the corresponding side of the smaller triangle.

Watch Video Solution

46. In $\triangle ABC \sim \triangle DEF$, AB = 4 cm, DE =6cm , EF = 9 cm and FD = 12 cm, then find the perimeter of $\triangle ABC$.

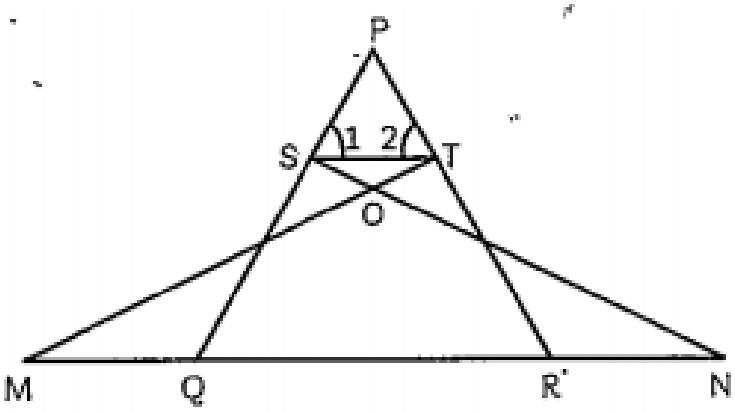
Watch Video Solution

47. In the figure if $\triangle ABC \sim \triangle DEF$ and their sides of lengths (in cm) are marked along them, them find the lengths of sides of each triangle.



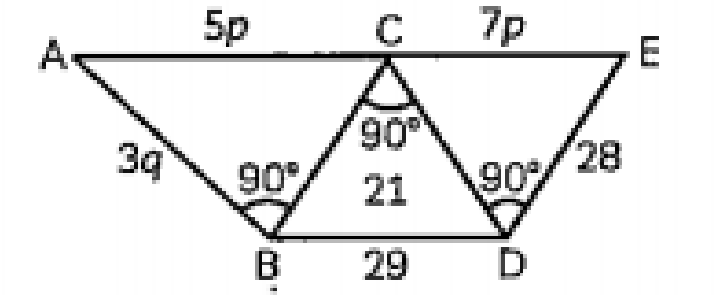
Watch Video Solution

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



Watch Video Solution

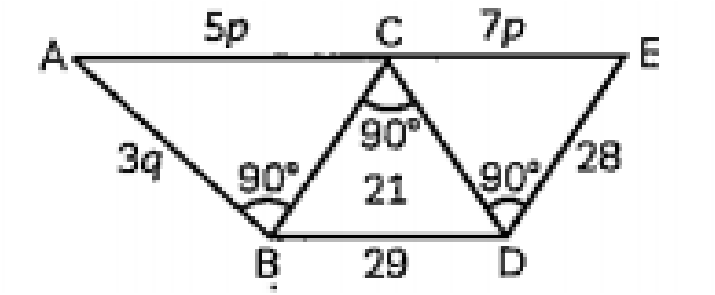
49. Three $30^\circ - 60^\circ - 90^\circ$ set squares are together as shown in the diagram.



Find the value of P.

Watch Video Solution

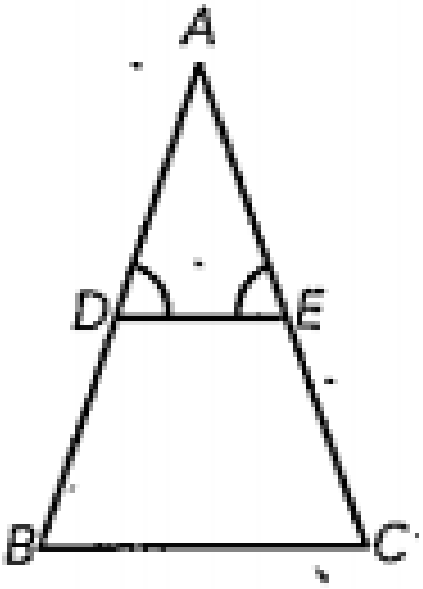
50. Three $30^\circ - 60^\circ - 90^\circ$ set squares are together as shown in the diagram.



Find the value of length AB.

Watch Video Solution

51. In the figure, $\angle D = \angle E$ and $\frac{AD}{DB} = \frac{AE}{EC}$, prove that BAC is an isosceles triangle.



Watch Video Solution

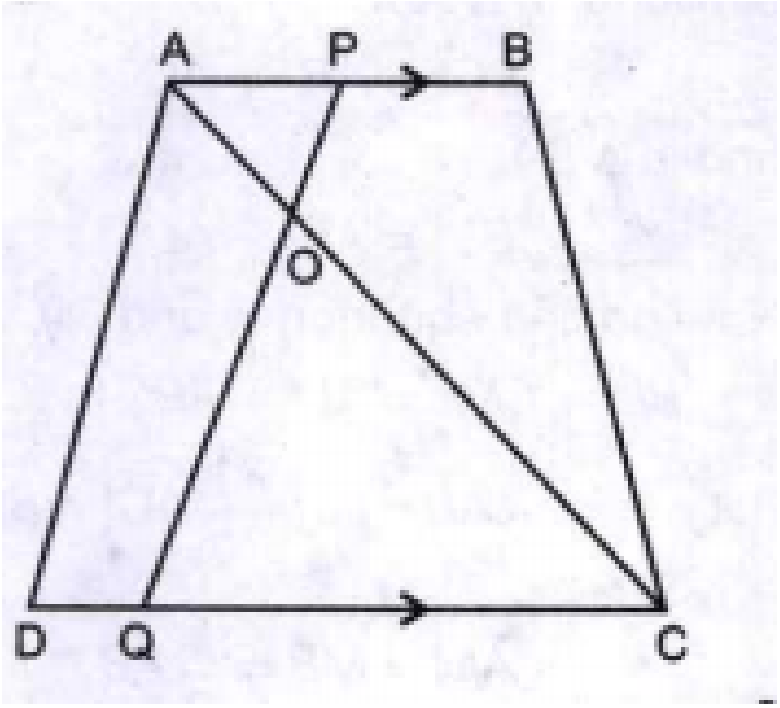
52. In $\triangle ABC$, $\angle B = 90^\circ$ and D is the mid point of BC. Prove that $AC^2 = AD^2 + 3CD^2$.

Watch Video Solution

53. Diagonals of a trapezium PQRS intersect each other at the point O, $PQ \| RS$ and PQ = 3 Rs. Find the ratio of the areas of $\triangle POQ$ and $\triangle ROS$.

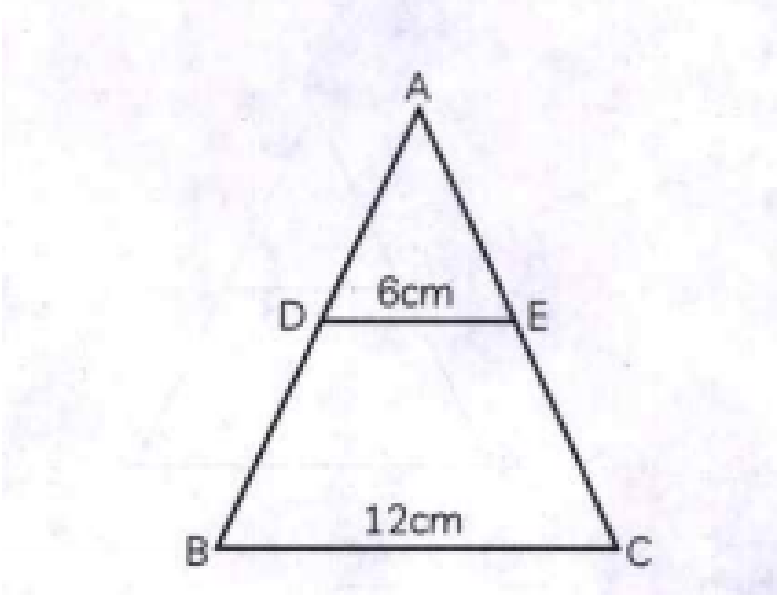
Watch Video Solution

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



Watch Video Solution

55. In the given figure, if $DE \mid\mid BC$, then find the ratio of $ar(\Delta ADE)$ and $ar(DECB)$.



Watch Video Solution

56. 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.

Watch Video Solution

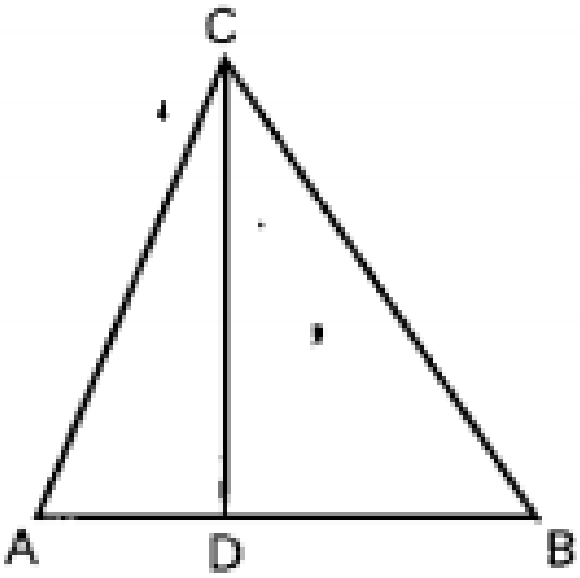
57. Two right triangles ABC and DBC are drawn on the same hypotenuse BC and on the same side of BC. If AC and BD intersect at P, prove that $AP \times PC = BP \times DP$.

Watch Video Solution

58. Diagonals of a trapezium PQRS intersect each other at the point O, $PQ \mid\mid RS$ and PQ = 3 Rs. Find the ratio of the areas of $\triangle POQ$ and $\triangle ROS$.

Watch Video Solution

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



Watch Video Solution

60. A 15 metres high tower coasts a shadow 24 metres long at a certain time and at the same time, a telephone pole casts a shadow 16

metres long. Find the height of the telephone pole.

Watch Video Solution

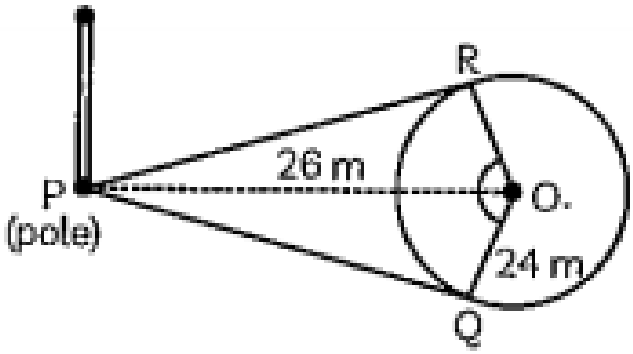
61. If P and Q are the points on side CA and CB, respectively of $\triangle ABC$, right angled at C, prove that $\left(AQ^2 + BP^2\right) = \left(AB^2 + PQ^2\right)$.

Watch Video Solution

62. If the area of two similar triangles are equal, prove that they are congrent.

Watch Video Solution

63. There is a circular park of radius 24 m and there is a pole at a distance of 26 m from the centre of the park as shown in the figure. It is planned to enclose the park by planting trees along line segments PQ and PR tangential to the park.

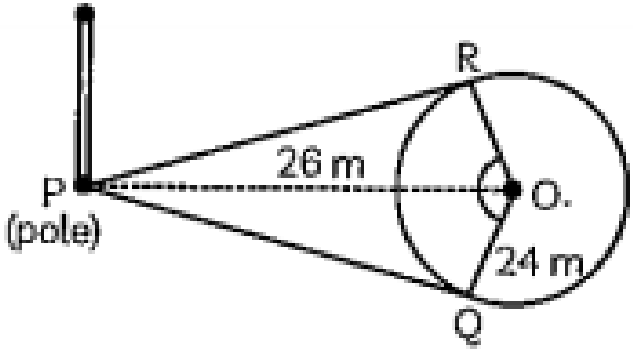


Find the length of PQ and PR,

Watch Video Solution

64. There is a circular park of radius 24 m and there is a pole at a distance of 26 m from the centre of the park as shown in the figure. It is planned to enclose the park by planting trees

along line segments PQ and PR tangential to the park.



If six trees are to be planted along each tangential line segments at equal distances, find the distance between any two consecutive trees.

Watch Video Solution

65. D, E and F are respectively the mid points of the sides AB, AC and BC of triangle ABC respectively. Find the ratio of areas of triangle DEF and triangle ABC.

Watch Video Solution

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

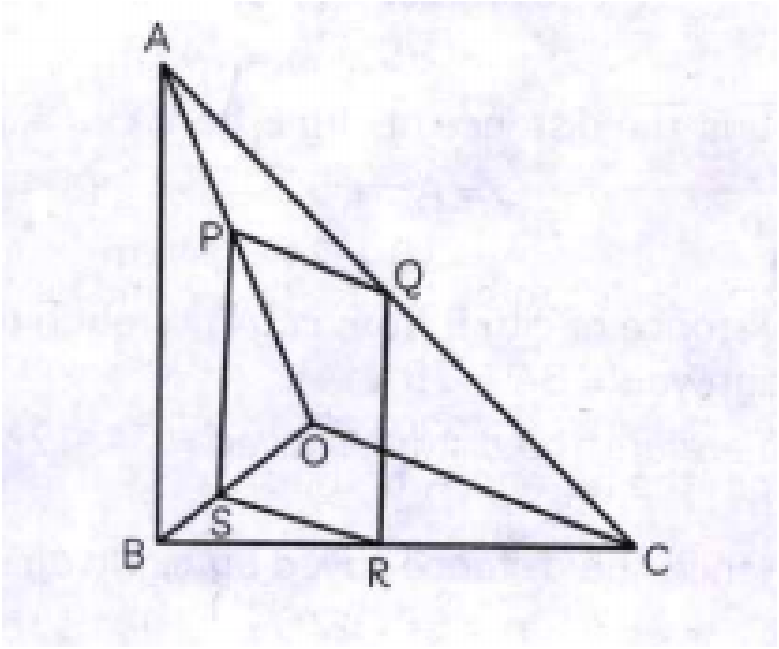
Watch Video Solution

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

Watch Video Solution

68. In the given figure, if PQRS is a parallelogram and $AB \mid\mid PS$, then prove

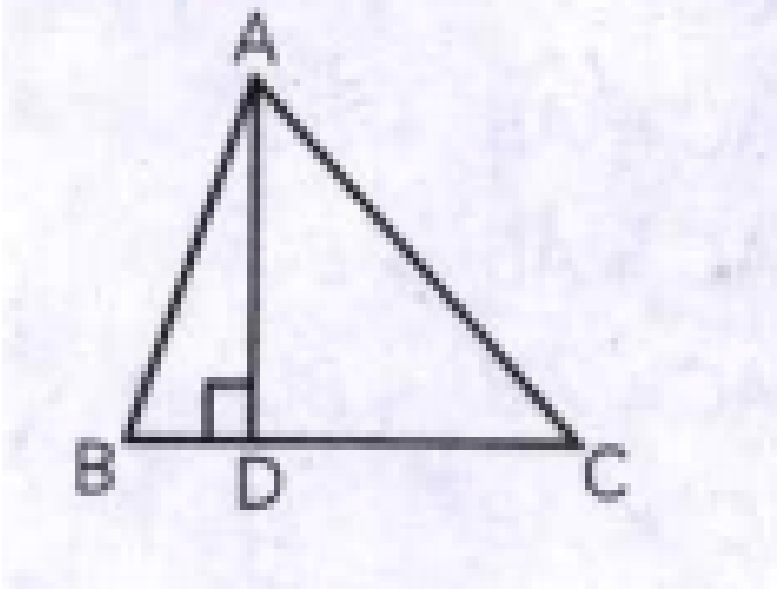
that $OC \mid\mid SR$.



Watch Video Solution

69. $\triangle ABC$ figure, $AD \perp BC$. Prove that

$AC^2 = AB^2 + BC^2 - 2BC \times BD$



Watch Video Solution

70. Prove that in a right angle triangle, the square of the hypotenuse is equal to the sum of squares of the other two sides.

Watch Video Solution

71. For going to city B from city A, there is a route via city C such that $AC \perp CB$, $AC = 2xkm$ 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 aftr the construction of the highway.

Watch Video Solution

72. In $\triangle PQR, PD \perp QR$ such that D lies on QR. If PQ = a, PR = b, QD = c and DR = d, prove that (a + b)(a - b)= (c + d)(c - d).

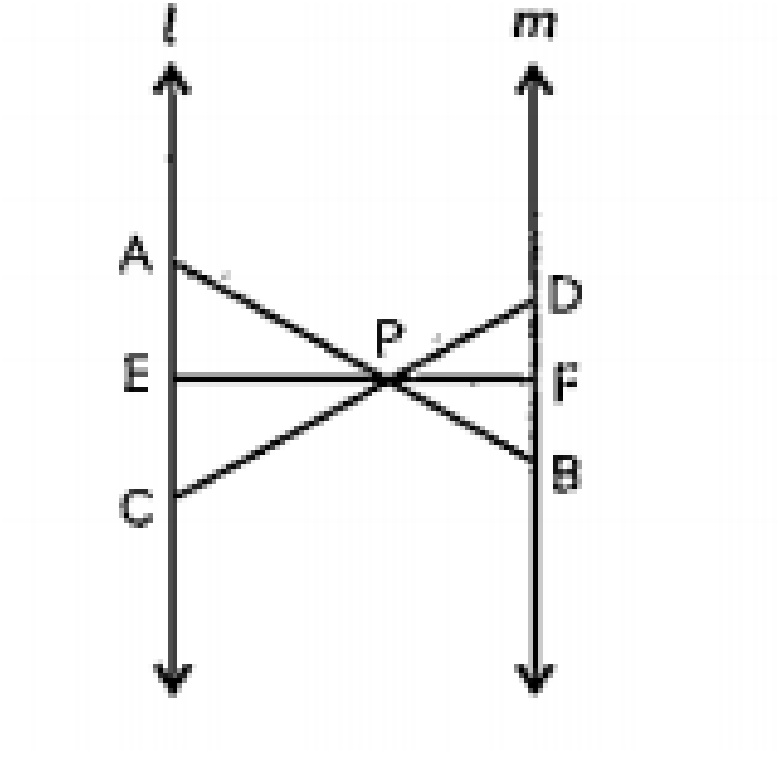
Watch Video Solution

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

Watch Video Solution

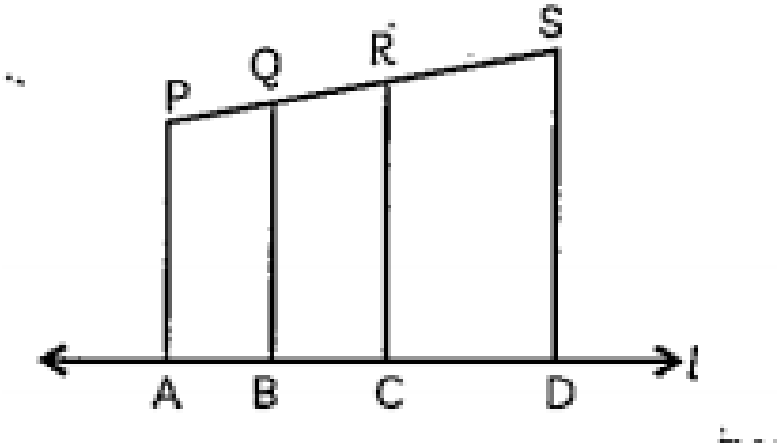
74. In the given figure,$l \mid\mid m$ and line segments AB, CD and EF are concurrent at point P.

Prove that $\frac{AE}{BF} = \frac{AC}{BD} = \frac{CF}{FD}$



Watch Video Solution

75. In the given figure, 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 the PQ, QR and RS.



Watch Video Solution

76. 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.

Watch Video Solution