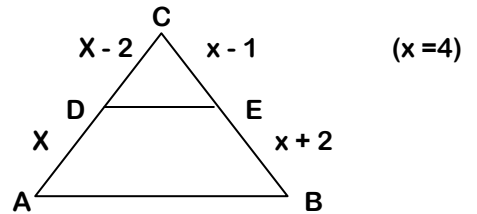
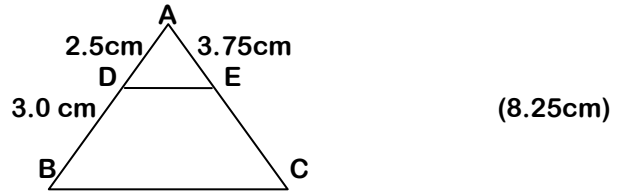


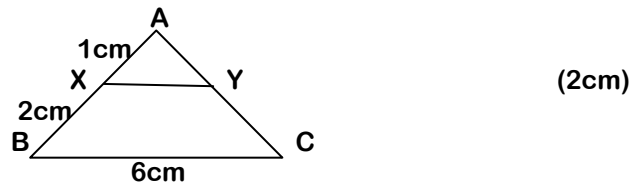
1. What value of  $x$  will make  $DE \parallel AB$  in the given figure ?



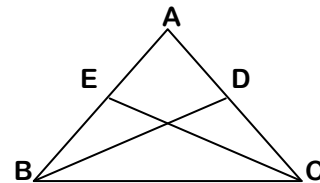
2. In figure,  $DE$  is parallel to base  $BC$ . If  $AD = 2.5$  cm,  $BD = 3.0$  cm and  $AE = 3.75$  cm, find the length of  $AC$



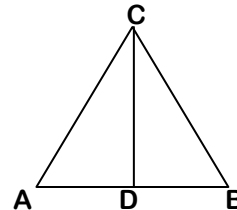
3. In the figure.  $XY \parallel BC$ . Find the length of  $XY$



4. In figure, considering triangles  $BEP$  and  $CDP$ , prove that:  
 $BP \times PD = EP \times PC$

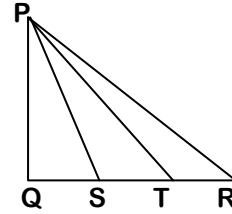


5.  $D$  is a point on the side  $BC$  of a  $\triangle ABC$  such that angle  $ADC =$  angle  $BAC$ . Prove that  $CA \parallel CD = CB \parallel CA$   
6. In figure angle  $ACB = 90^\circ$ ,  $CD$  perpendicular to  $AB$ , prove that  $CD^2 = BD \cdot CD$



7. A vertical pole which is 2.25m long casts a 6.75m long shadow on the ground. At the same time a vertical Tower casts a 90m long shadow on the ground. Find the height of the tower (30m)
8. If  $\triangle ABC \sim \triangle PQR$ . Also ar  $(\triangle ABC) = 4$  ar  $(\triangle PQR)$ . If  $BC = 12$ cm, find  $QR$  (6cm)
9. The areas two similar triangles  $ABC$  and  $DEF$  are  $36 \text{ cm}^2$  and  $81 \text{ cm}^2$  respectively. If  $EF = 6.9$  cm, determine  $BC$  (4.6 cm)
10. Two isosceles triangles have equal angles and their areas are in the ratio 81: 25. Find the ratio of their Corresponding heights
11.  $D, E$  and  $F$  are respectively the mid points of the sides  $BC, CA$  and  $AB$  of  $\triangle ABC$ . Find the ratio of the areas of  $\triangle DEF$  and  $\triangle ABC$  (1 : 4)
12. The perimeters of two similar triangles are 36cm and 48cm respectively. If one side of the first triangle is 9cm, what is the corresponding side of the other triangle (12cm)
13. In triangle  $ABC$ ,  $AB = \sqrt{3}a$ ,  $AC = a$  and  $BC = 2a$ . Prove that  $\angle A = 90^\circ$
14. In triangle  $ABC$ ,  $\angle BAC = 90^\circ$  and  $AD \perp BC$ . If  $BD = 8$ cm,  $DC = 18$  cm, find  $AD$
15. Two poles of height 8m and 13m stand on a plane ground. If the distance between their tips is 13m, find the distance between their feet (12m)
16. Two poles of height 10m and 15m stand vertically on a plane ground. If the distance between their feet is  $5\sqrt{3}$ m, find the distance between their tops (10m)
17. The perpendicular from  $A$  on side  $BC$  of a triangle  $ABC$  intersects  $BC$  at  $D$  such that  $BD = 3CD$ . Prove that  $2 AB^2 - 2 AC^2 = BC^2$
18. In an isosceles triangle  $ABC$  with  $AB = AC$ ,  $BD$  is a perpendicular from  $B$  to the side  $AC$ . Prove that  $BD^2 - CD^2 = 2CD \cdot AD$

19. P and Q are points on the sides CA and CB respectively of a  $\triangle ABC$  right angled at C. Prove that  $AQ^2 + BP^2 = AB^2 + PQ^2$
20. In  $\triangle ABC$ , If AD is the median, show that  $AB^2 + AC^2 = 2(AD^2 + BD^2)$
21. In figure, T trisects the side QR of right triangle PQR.  
Prove that  $8 PT^2 = 3 PR^2 + 5 PS^2$



22. If BL and CM are medians of a triangle ABC right angled at A, then prove that  $4(BL^2 + CM^2) = 5 BC^2$
23. In a triangle ABC,  $AB = BC = CA = 2a$  and AD perpendicular to BC. Prove that  $AD = a\sqrt{3}$  and area of  $\triangle ABC = \sqrt{3} a^2$
24. In an equilateral triangle ABC, AD is the altitude drawn from A on side BC. Prove that  $3A^2 = 4 AD^2$
25. In a triangle ABC, AD is perpendicular on BC, prove that  $AB^2 + CD^2 = AC^2 + BD^2$
26. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares on its diagonals
27. P is a point in the interior of rectangle ABCD. If P is joined to each of the vertices of the rectangle, prove that  $PB^2 + PD^2 = PA^2 + PC^2$

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