MATHEMATICS

TRIANGLES

1. If in an isosceles triangle 'a' is the length of the base and 'b' the length of one of the equal side, then its area is-

(A) $\frac{a}{4}\sqrt{4b^2-a^2}$ (B) $\frac{b}{4}\sqrt{4b^2-a^2}$

(C) $\frac{a+b}{4}\sqrt{a^2-b^2}$ (D) $\frac{a-b}{4}\sqrt{b^2-a^2}$

SOL : AB = AC = b, BC = a, BD = a/2

$$\Delta ABC = \frac{1}{2}\times BC\times AD = \frac{1}{2}\times a\times\sqrt{b^2-\frac{b^2}{4}} = \frac{a}{4}\sqrt{4b^2-a^2}$$

ANS : A

2. If an equilateral triangle of area X and a square of area Y have the same perimeter, then -

(A) X >Y (B) X < Y

(C) X = Y (D) $X \le Y$

SOL : if the perimeter of the polygons is the same, the polygon with greater sides has the greater area.

ANS : B

3. PSR is a triangle right angled at S. D is the mid-point of SR. If the bisector of $\angle$ PSR and perpendicular bisector of SR meet at O, then triangle OSD is -

(A) scalene (B) equilateral

(C) isosceles right angled (D) acute-angled

SOL : Clearly $\angle OSD = \angle SOD \Rightarrow SD = OD$

Further, $\angle SDO = 90^0$

$\therefore$ ΔOSD is isosceles triangle (right angled)

ANS : C

4. If any two sides of a triangle are produced beyond its base and the exterior angles thus obtained are bisected, then these bisectors will include an angle equal to -

(A) half the sum of the base angles (B) sum of the base angles

(C) half the difference of the base angles (D) difference of the base angles

SOL : Half the sum of the base angles

ANS : A

5. If x is the length of the median of an equilateral triangle, then its area is

(A) x^2 (B) $\frac{\sqrt{3}}{2}x^2$

(C) $\frac{\sqrt{3}}{3}x^2$ (D) $\frac{1}{2}x^2$

SOL : The side of the triangle will be $\frac{2x}{\sqrt{3}}$

$\therefore$ Area of the triangle = $\frac{1}{2}\times \text{base}\times \text{height}$

$$= \frac{1}{2}\times\frac{2x}{\sqrt{3}}\times x = \frac{\sqrt{3}}{3}x^2$$

ANS : C

6. The area of a right angled triangle is 40 sq. cm. and perimeter is 40 cm. The length of its hypotenuse is -

(A) 16 cm. (B) 18cm.

(C) 17 cm. (D) Data sufficient

SOL : Suppose hypotenuse of the triangle is c and other sides are a and b. Obviously, c = $\sqrt{a^2+b^2}$

We have, a + b + c = 40 and $\frac{1}{2}ab = 40 \Rightarrow ab = 80$

Therefore , 40 – (a – b) = $\sqrt{a^2+b^2}$

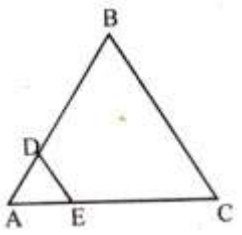
$\Rightarrow$ $(a+b)^2 - 2\times 40\times(a+b) + 1600 = a^2+b^2$

$\Rightarrow$ $a^2+b^2+2\times 80 - 80(a+b) + 1600 = a^2+b^2$

$\Rightarrow$ C = 40 – (a + b) = 40 – 22 = 18 cm

ANS : B

7. If each side of triangle ABC is of length 4 and if AD is 1 a ED $\perp$ AB. What is area of region BCED -



(A) $8\sqrt{3}$ (B) $4\sqrt{3}$

(C) $4.5\sqrt{3}$ (D) $3.5\sqrt{3}$

SOL : Area of ABC will be $\frac{\sqrt{3}}{4}(4)^2 = 4\sqrt{3}$

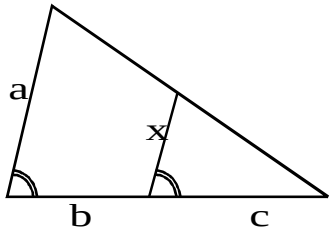
ADE is right triangle where AD = 1, so we will get DE = $\sqrt{3}$ & AE = 2

So area of Δ ADE will be $\frac{1}{2}\times 1\times\sqrt{3} = \frac{\sqrt{3}}{2}$

So area of BCDE = $4\sqrt{3} - \sqrt{3}/2 = 3.5\sqrt{3}$

ANS : D

8. Using the given figure, determine x



(A) $\frac{ac}{b+c}$ (B) $\frac{ac}{b-c}$

(C) $\frac{b+c}{ac}$ (D) $\frac{2ac}{b+c}$

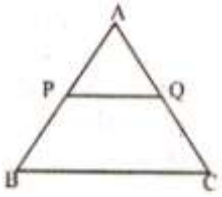
SOL :

$$\frac{a}{b+c} = \frac{x}{c}$$

$$\Rightarrow x = \frac{ac}{b+c}$$

ANS : A

9. In the adjacent figure, P and Q are points on the sides AB and AC respectively of a triangle ABC. PQ is parallel to BC and divides the triangle ABC into 2 parts, equal in area. What is the ratio of AP : AB



(A) 1 : 1 (B) $(\sqrt{2}-1):\sqrt{2}$

(C) 1 : $\sqrt{2}$ (D) $(\sqrt{2}-1):1$

SOL : As PQ is parallel to BC $\Rightarrow \Delta ABC = \Delta APQ$

$\Rightarrow \frac{\text{Area of ABC}}{\text{Area of APQ}} = \frac{2}{1}$ (Ratio of square of corresponding)

$\therefore$ Ratio of sides = $\frac{AB}{AP} = \frac{\sqrt{2}}{1}$

ANS : B

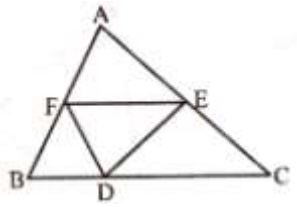
10. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Ratio of the areas of triangles ABC and BDC is-

(A) 2 : 1 (B) 1 : 2

(C) 4 : 1 (D) 1 : 4

ANS : C

11. In triangle ABC, D, E, F are points of trisection of BC, AC and AB respectively. Which of the following statements is not true ?

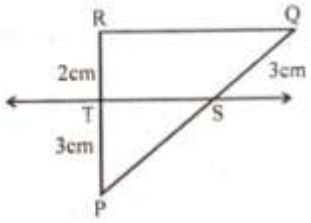


(A) Area ΔEDC = 2/9 area ΔABC (B) Area ΔFBD = 2/7 area AFDC

(C) Area ΔDEF = 2/9 area ΔABC (D) Area (ΔEDC + ΔDBF +ΔAFE)=2 area ΔDEF

ANS : D

12. In the adjoining figure, if ST || QR. What is the length of PS –



(A) 2 cm (B) 4.5 cm

(C) 4 cm (D) 3 cm

SOL : PS = ?

from B.P.T,

$$\frac{RT}{TP}=\frac{QS}{PS}$$

$$\Rightarrow \quad \frac{2}{3}=\frac{3}{PS}$$

$$\Rightarrow \quad PS=4.5\text{cm}$$

ANS : B

13. If ΔDEF if DE = $6\sqrt{3}$ cm, DF = 12 cm and EF = 6 cm, then the angle E is

(A) 120^0 (B) 90^0

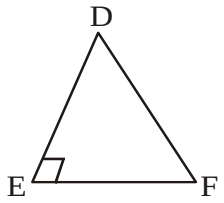
(C) 60^0 (D) 45^0

SOL : $DE=6\sqrt{3}\,\text{cm}$

DF = 12 cm

EF = 6 cm

We see that



$$(DF)^2-(EF)^2=(DE)^2$$

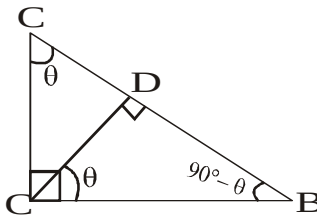
$$DF^2=DE^2+EF^2$$

so, $\angle DEF$ is a right angle

so, $\angle E=90^o$

ANS : B

14. In the adjoining figure, $\frac{BD}{DA}$ is equal to

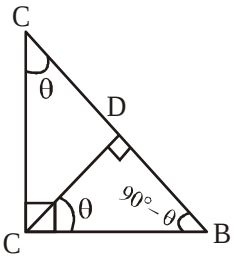


(A) $\left(\frac{AB}{AC}\right)^2$ (B) $\frac{AB}{AC}$

(C) $\left(\frac{AB}{AD}\right)^2$ (D) $\frac{AB}{AD}$

SOL : $\frac{BD}{DA} = ?$

In ΔABC and in ΔABD



$\angle A = \angle D$ [each 90°]

$\angle C$ is common

so, it is similar triangle,

so, $\angle ABC$ and ΔDBA

$\Rightarrow \quad \frac{BD}{DA} = \frac{AB}{AC}$

ANS : B

15. If ABC is an isosceles triangles and D is a point on BC such that AD $\perp$ BC, then -

(A) $AB^2 - AD^2 = BD.DC$ (B) $AB^2 - AD^2 = BD^2 - DC^2$

(C) $AB^2 + AD^2 = BD.DC$ (B) $AB^2 + AD^2 = BD^2 - DC^2$

ANS : A

16. Triangle ABC is such that AB = 3 cm, BC = 2 cm and CA = 2.5 cm. Triangle DEF is similar to Δ ABC. If EP 4 cm, then the perimeter of Δ DEF is :

(A) 7.5 cm (B) 15 cm (C) 22.5 cm (D) 30 cm

ANS : B

17. In Δ ABC, AB = 3 cm, AC = 4 cm and AD is the bisector of $\angle$ A. Then, BD : DC is :

(A) 9 : 16 (B) 16 : 9 (C) 3 : 4 (D) 4 : 3

ANS : C

18. In a equilateral triangle ABC, if AD $\perp$ BC, then :

(A) $2AB^2 = 3AD^2$ (B) $4AB^2 = 3AD^2$ (C) $3AB^2 = 4AD^2$ (D) $3AB^2 = 2AD^2$

ANS : C

19. ABC is a triangles and DE is drawn parallel to BC cutting the other sides at D and E. If AB = 3.6 cm, AC = 2.4 cm and AD = 2.1 cm, then AE is equal to :

(A) 1.4 cm (B) 1.8 cm (C) 1.2 cm (D) 1.05 cm

ANS : A

20. The line segments joining the mid points of the sides of a triangle from four triangles each of which is :

(A) similar to the original triangle (B) congruent to the original triangle.

(C) an equilateral triangle (D) an isosceles triangle.

ANS : A

21. In Δ ABC and Δ DEF, $\angle A = 50^0, \angle B = 70^0, \angle C = 60^0, \angle D = 60^0, \angle E = 70^0, \angle F = 50^0$, then Δ ABC is similar to :

(A) Δ DEF (B) Δ EDF (C) Δ DFE (D) Δ FED

ANS : D

22. D, E, F are the mid points of the sides BC, CA and AB respectively of Δ ABC. Then Δ DEF is congruent to triangle

(A) ABC (B) AEF (C) BFD, CDE (D) AFE, BFD, CDE

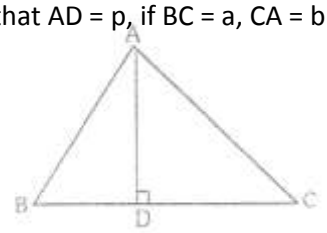
ANS : D

23. If in the triangles ABC and DEF, angle A is equal to angle E, both are equal to 40^0, AB : ED = AC : EF and angle F is 65^0, then angel B is :-

(A) 35^0 (B) 65^0 (C) 75^0 (D) 85^0

ANS : C

24. In a right angled Δ ABC, right angled at A, if AD $\perp$ BC such that AD = p, if BC = a, CA = b and AB = c, then :

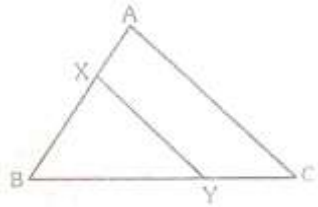


(A) $p^2 = b^2 + c^2$ (B) $\frac{1}{p^2} = \frac{1}{b^2} + \frac{1}{c^2}$

(C) $\frac{p}{a} = \frac{p}{b}$ (D) $p^2 = b^2 c^2$

ANS : B

25. In the adjoining figure, XY is parallel to AC. If XY divides the triangle into equal parts, then the value of $\frac{AX}{AB}$ =



(A) $\frac{1}{2}$ (B) $\frac{1}{\sqrt{2}}$

(C) $\frac{\sqrt{2}+1}{\sqrt{2}}$ (D) $\frac{\sqrt{2}-1}{\sqrt{2}}$

ANS : B

26. The ratio of the corresponding sides of two similar triangles is 1 : 3. The ratio of their corresponding heights is :

(A) 1 : 3 (B) 3 : 1 (C) 1 : 9 (D) 9 : 1

ANS : A

27. The areas of two similar triangles are 49 cm^2 and 64 cm^2 respectively. The ratio of their corresponding sides is :

(A) 49 : 64 (B) 7 : 8 (C) 64 : 49 (D) None of these

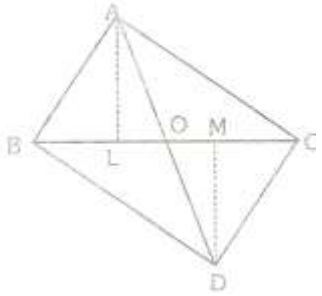
ANS : B

28. The areas of two similar triangles are 12 cm^2 and 48 cm^2. If the height of the similar one is 2.1 cm, then the corresponding height of the bigger one is :

(A) 4.41 cm (B) 8.4 cm (C) 4.2 cm (D) 0.525 cm

ANS: C

29. In the adjoining figure, ABC and DBC are two triangles on the same base BC, AL $\perp$ BC and DM $\perp$ BC. Then, $\frac{area(\Delta ABC)}{area(\Delta DBC)}$ is equal to ;

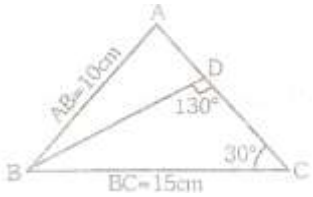


(A) $\frac{AO}{OD}$ (B) $\frac{AO^2}{OD^2}$

(C) $\frac{AO}{AD}$ (D) $\frac{OD^2}{AO^2}$

ANS : A

30. In the adjoining figure, AD : DC = 2 : 3, then $\angle$ ABC is equal to :



(A) 30^0 (B) 40^0 (C) 45^0 (D) 110^0

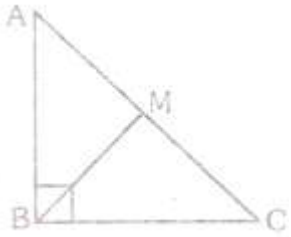
ANS : B

31. In Δ ABC, D and E are points on AB and AC respectively such that DE $\parallel$ BC. If AE = 2 cm, EC = 3 cm and BC = 10 cm, then DE is equal to ;

(A) 5 cm (B) 4 cm (C) 15 cm (D) $\frac{20}{3}$ cm

ANS : B

32. In the given figure, $\angle$ ABC = 90^0 and BM is a median, AB = 8 cm and BC = 6 cm. Then, length BM is equal to :



(A) 3 cm (B) 4 cm (C) 5 cm (D) 7 cm

ANS : C

33. If D, E, F are respectively the mid points of the sides BC, CA and AB of Δ ABC and the area of Δ ABC is 24 sq. cm, then the area of Δ DFE is :-

(A) 24 cm^2 (B) 12 cm^2 (C) 8 cm^2 (D) 6 cm^2

ANS : D

34. In a right angled triangle, if the square of the hypotenuse is twice the product of the other two sides, then one of the angles of the triangle is :-

(A) 15^0 (B) 30^0 (C) 45^0 (D) 60^0

ANS : C

35. Consider the following statements :

1. If three sides of a triangles are equal to three sides of another triangle, then the triangles are congruent.

2. If three angles of a triangles are respectively equal to three angles of another triangle, then the two triangles are congruent.

Of these statements,

(A) 1 is correct and 2 is false (B) both 1 and 2 are false

(C) both 1 and 2 are correct (D) 1 is false and 2 is correct

ANS : A

36. In a triangle ABC, if AB, BC and AC are the three sides of the triangle, then which of the statements is necessarily true?

(A) AB + BC < AC (B) AB + BC > AC (C) AB + BC = AC (D) $AB^2 + BC^2 = AC^2$

ANS : B

37. The sides of a triangle are 12 cm, 8 cm and 6 cm respectively, the triangle is :

(A) acute (B) obtuse (C) right (D) can't be determined

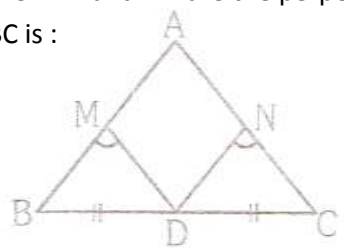
ANS : B

38. In an equilateral triangle, the incentre, circumcentre, orthocenter and centroid are:

(A) concylic (B) coincident (C) collinear (D) none of these

ANS : B

39. In the adjoining figure D is the midpoint of a Δ ABC. DM and DN are the perpendiculars on AB and AC respectively and DM = DN, then the Δ ABC is :



(A) right angled

(B) isosceles

(C) equilateral

(D) scalene

ANS : B

40. Triangle ABC is such that AB = 9 cm, BC = 6 cm, AC = 7.5 cm, Triangle DEF is similar to Δ ABC, If EF = 12 cm then DE is :

(A) 6 cm (B) 16 cm (C) 18 cm (D) 15 cm

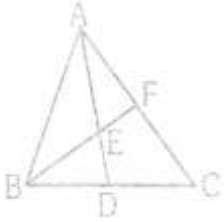
ANS : C

41. In Δ ABC, AB = 5 cm, AC = 7 cm. If AD is the angle bisector of < A. Then BD : CD is :

(A) 25 : 49 (B) 49 : 25 (C) 6 : 1 (D) 5 : 7

ANS : D

42. In a Δ ABC, D is the mid-point of BC and E is mid-point of AD, BF passes through E. What is the ratio of AF : FC



(A) 1 : 1

(B) 1 : 2

(C) 1 : 3

(D) 2 : 3

ANS : B

43. In a Δ ABC, AB = AC and AD $\perp$ BC, then :

(A) AB < AD (B) AB > AD (C) AB = AD (D) AB $\leq$ AD

ANS : B

44. The difference between altitude and base of a right angled triangle is 17 cm and its hypotenuse is 25 cm. What is the sum of the base and altitude of the triangle is ?

(A) 24 cm (B) 31 cm (C) 36 cm (D) can't be determined

ANS : B

45. If AB, BC and AC be the three sides of a triangle ABC, which one of the following is true ?

(A) AB – BC = AC (B) (AB – BC) > AC (C) (AB – BA) < AC (D) $AB^2 - CB^2 = AC^2$

ANS : C

46. In the adjoining figure D, E and F are the mid-points of the sides BC, AC and AB respectively. Δ DEF is congruent to triangle :

(A) ABC

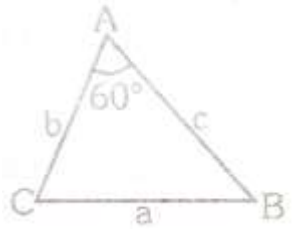
(B) AEF

(C) CDE , BFD

(D) AFE , BFD and CDE

ANS : D

47. In the adjoining figure $\angle$ BAC = 60^0 and BC = a, AC = b and AB = c, then :



(A) $a^2 = b^2 + c^2$

(B) $a^2 = b^2 + c^2 - bc$

(C) $a^2 = b^2 + c^2 + bc$

(D) $a^2 = b^2 + 2bc$

ANS : B

48. If the medians of a triangle are equal, then the triangle is:

(A) right angled (B) isosceles (C) equilateral (D) scalene

ANS : C

49. The incentre of a triangle is determined by the:

(A) Medians (B) angle bisectors

(C) perpendicular bisectors (D) altitudes

ANS : B

50. The point of intersection of the angle bisectors of a triangle is :

(A) orthocenter (B) centroid (C) incentre (D) circumcentre

ANS : C

51. A triangle PQR is formed by joining the mid-points of the sides of a triangle ABC, 'O' is the circumcentre of Δ ABC, then for Δ PQR, the point 'O' is :

(A) incentre (B) circumcentre (C) orthocenter (D) centroid

ANS : C

52. If AD, BE, CF are the altitudes of Δ ABC whose orthocenter is H, then C is the orthocenter of :

(A) Δ ABH (B) Δ BDH (C) Δ ABD (D) Δ BEA

ANS : A

53. In an equilateral Δ ABC, if a, b and c denote the lengths of perpendiculars from A, B and C respectively on the opposite sides, then:

(A) a > b > c (B) a > b < c (C) a = b = c (D) a = c $\neq$ b

ANS : C

54. Any two of the four triangles formed by joining the midpoints of the sides of a given triangle are:

(A) congruent (B) equal in area but not congruentAB > AD

(C) unequal in area and not congruent (D) none of these

ANS : A

55. The internal bisectors of $\angle$ B and $\angle$ C of Δ ABC meet at O. If $\angle$ A = 80^0 then $\angle$ BOC is :

(A) 50^0 (B) 160^0 (C) 100^0 (D) 130^0

ANS : D

56. The point in the plane of a triangle which is at equal perpendicular distance from the sides of the triangle is :

(A) centroid (B) incentre (C) circumcentre (D) orthocenter

ANS : B

57. Incentre of a triangle lies in the interior of :

(A) an isosceles triangle only (B) a right angled triangle only

(C) any equilateral triangle only (D) any triangle

ANS : D

58. In a triangle PQR, PQ = 20 cm and PR = 6 cm, the side QR is :

(A) equal to 14 cm (B) less than 14 cm (C) greater than 14 cm (D) none of these

ANS : C

59. If ABC is a right angled triangle at B and M, N are the mid-points of AB and BC, than 4 (AN^2 + CM^2) is equal to-

(A) $4AC^2$ (B) $6\ AC^2$ (C) $5\ AC^2$ (D) $\frac{5}{4}\ AC^2$

ANS : C

60. ABC is a right angle triangle at A and AD is perpendicular to the hypotence. Then $\frac{BD}{CD}$ is equal to

(A) $\left(\frac{AB}{AC}\right)^2$ (B) $\left(\frac{AB}{AD}\right)^2$ (C) $\frac{AB}{AC}$ (D) $\frac{AB}{AD}$

ANS : A

61. Let ABC be an equilateral triangle. Let BE $\perp$ CA meeting CA at E, then (AB^2 + BC^2 + CA^2) is equal to

(A) $2BE^2$ (B) $3\ BE^2$ (C) $4\ BE^2$ (D) $6\ BE^2$

ANS : C

62. If D, E and F are respectively the mid-points of sides of BC, CA and AB of a Δ ABC. If EF = 3 cm, FD = 4 cm, and AB = 10 cm, then DE, BC and CA respectively will be equal to :

(A) 6, 8 and 20 cm (B) 4, 6 and 8 cm (C) 5, 6 and 8 cm (D) $\frac{10}{3}$, 9 and 12 cm

ANS : C

63. In the right angle triangle $\angle C = 90^0$. AE and BD are two medians of a triangle ABC meeting at F. The ratio of the area of Δ ABF and the quadrilateral FDCE is :

(A) 1 : 1 (B) 1 : 2 (C) 2 : 1 (D) 2 : 3

ANS : A

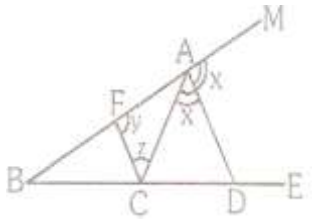
64. The bisector of the exterior $\angle A$ of Δ ABC intersects the side BC produced to D. Here CF is parallel to AD.

(A) $\frac{AB}{AC} = \frac{BD}{CD}$

(B) $\frac{AB}{AC} = \frac{CD}{BD}$

(C) $\frac{AB}{AC} = \frac{BC}{CD}$

(D) None of these



ANS : A

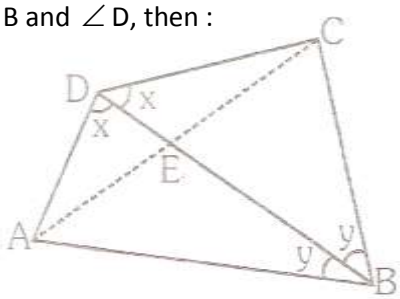
65. The diagonal BD of a quadrilateral ABCD bisects $\angle B$ and $\angle D$, then :

(A) $\frac{AB}{CD} = \frac{AD}{BC}$

(B) $\frac{AB}{BC} = \frac{AD}{CD}$

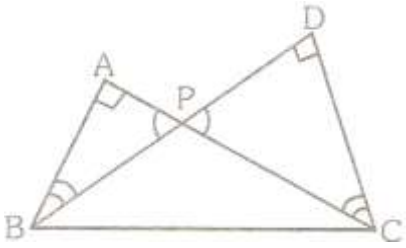
(C) $AB = AD \times BC$

(D) None of these



ANS : B

66. Two right triangles ABC and DBC are drawn on the same hypotenuse BC on the same side of BC. If AC and DB intersects at P, then



(A) $\frac{AP}{PC} = \frac{BP}{DP}$

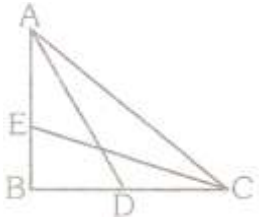
(B) $AP \times DP = PC \times BP$

(C) $AP \times PC \times = BP \times DP$

(D) $AP \times BP \times = PC \times PD$

ANS : C

67. In figure, ABC is a right triangle, right angled at B. AD and CE are the two medians drawn from A and C respectively. If AC = 5 cm and AD = $\frac{3\sqrt{5}}{2}$ cm, find the length of CE:



(A) $2\sqrt{5}$ cm

(B) 2.5 cm

(C) 5 cm

(D) $4\sqrt{2}$ cm

ANS : A

68. In a Δ ABC, AB = 10 cm, BC = 12 cm and AC = 14 cm. Find the length of median AD. If G is the centroid, find length of GA :

(A) $\frac{5}{3}\sqrt{7}, \frac{5}{9}\sqrt{7}$ (B) $5\sqrt{7}, 4\sqrt{7}$ (C) $\frac{10}{\sqrt{3}}, \frac{8}{3}\sqrt{7}$ (D) $4\sqrt{7}, \frac{8}{3}\sqrt{7}$

ANS : D

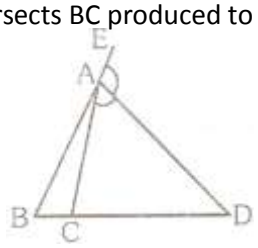
69. The three sides of a triangles are given. Which one of the following is not a right triangle ?

(A) 20, 21, 29 (B) 16, 63, 65

(C) 56, 90, 106 (D) 36, 35, 74

ANS : D

70. In the figure AD is the external bisector of $\angle$ EAC, intersects BC produced to D. If AB = 12 cm, AC = 8 cm and BC = 4 cm, find CD.



(A) 10 cm

(B) 6 cm

(C) 8 cm

(D)9 cm

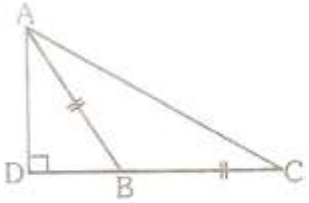
ANS : C

71. In Δ ABC, AB2 + AC2 = 2500 cm2 and median AD = 25 cm, find BC.

(A) 25 cm (B) 40 cm (C) 50 cm (D) 48 cm

ANS : C

72. In the given figure, AB = BC and $\angle$ BAC = 150. AB = 10 cm. Find the area of Δ ABC.



(A) 50 cm^2

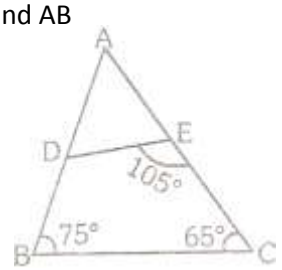
(B) 40 cm^2

(C) 25 cm^2

(D) 32 cm^2

ANS : C

73. In the given figure, if $\frac{DE}{BC} = \frac{2}{3}$ and if AE = 10 cm. Find AB



(A) 16 cm

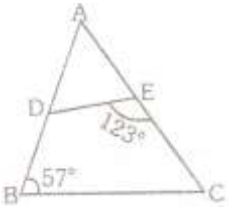
(B) 12 cm

(C) 15 cm

(D) 18 cm

ANS : C

74. In the figure AD = 12 cm. AB = 20 cm and AE = 10 cm. Find EC.



(A) 14 cm

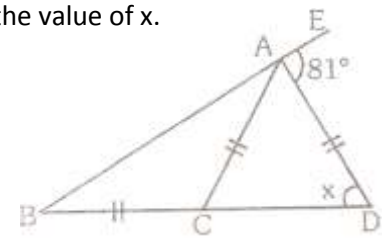
(B) 10 cm

(C) 8 cm

(D) 15 cm

ANS : A

75. In the given fig, BC = AC = AD, $\angle$ EAD = 81^0. Find the value of x.



(A) 45^0

(B) 54^0

(C) 63^0

(D) 36^0

ANS : B

76. What is the ratio of inradius to the circumradius of a right angled triangle?

(A) 1 : 2 (B) 1 : $\sqrt{2}$ (C) 2 : 5 (D) Can't be determined

ANS : D

77. Triangle ABC is such that AB = 3 cm, BC = 2 cm and CA = 2.5 cm. Triangle DEF is similar to ΔABC. If EF = 4 cm, then the perimeter of ΔDEF is :

(A) 7.5 cm (B) 15 cm (C) 22.5 cm (D) 30 cm

ANS: B

78. In ΔABC, AB = 3 cm, AC = 4 cm and AD is the bisector of $\angle$A. Then, BD : DC is :

(A) 9 : 16 (B) 16 : 9 (C) 3 : 4 (D) 4 : 3

ANS: C

79. In an equilateral triangle ABC, if AD $\perp$ BC, then:

(A) $2AB^2 = 3AD^2$ (B) $4AB^2 = 3AD^2$ (C) $3AB^2 = 4AD^2$ (D) $3AB^2 = 2AD^2$

ANS : C

80. ABC is a triangle and DE is drawn parallel to BC cutting the other sides at D and E. If AB = 3.6 cm, AC = 2.4 cm and AD = 2.1 cm, then AE is equal to :

(A) 1.4 cm (B) 1.8 cm (C) 1.2 cm (D) 1.05 cm

ANS : A

81. The line segments joining the mid points of the sides of a triangle form four triangles each of which is :

(A) similar to the original triangle. (B) congruent to the original triangle.
(C) an equilateral triangle. (D) an isosceles triangle.

ANS : A

82. D, E, F are the mid points of the sides BC, CA and AB respectively of ΔABC. Then ΔDEF is congruent to triangle

(A) ABC (B) AEF (C) BFD, CDE (D) AFE, BFD, CDE

ANS : D

83. If in the triangles ABC and DEF, angle A is equal to angle E, both are equal to 40°, AB : ED = AC : EF and angle F is 65°, then angle B is :-

(A) 35° (B) 65° (C) 75° (D) 85°

ANS : C

84. The ratio of the corresponding sides of two similar triangles is 1 : 3. The ratio of their corresponding heights is :

(A) 1 : 3 (B) 3 : 1 (C) 1 : 9 (D) 9 : 1

ANS : A

85. The areas of two similar triangles are 49 cm^2 and 64 cm^2 respectively. The ratio of their corresponding sides is:

(A) 49: 64 (B) 7: 8 (C) 64: 49 (D) None of these

ANS : B

86 The areas of two similar triangles are 12 cm^2 and 48 cm^2. If the height of the smaller one is 2.1 cm, then the corresponding height of the bigger one is:

(A) 4.41 cm (B) 8.4 cm (C) 4.2 cm (D) 0.525 cm

ANS : C

87. If D, E, F are respectively the mid points of the sides BC, CA and AB of ΔABC and the area of ΔABC is 24sq. cm, then the area of ΔDEF is :-

(A) 24 cm^2 (B) 12 cm^2 (C) 8 cm^2 (D) 6 cm^2

ANS : D

88. In a right angled triangle, if the square of the hypotenuse is twice the product of the other two sides, then one of the angles of the triangle is :-

(A) 15° (B) 30° (C) 45° (D) 60°

ANS : C

89. In a triangle ABC, if AB, BC and AC are the three sides of the triangle, then which of the statements is necessarily true?
(A) $AB + BC < AC$ (B) $AB + BC > AC$ (C) $AB + BC = AC$ (D) $AB^2 + BC^2 = AC^2$.

ANS : B

90. The sides of a triangle are 12 cm, 8 cm and 6 cm respectively, the triangle is :
(A) acute (B) obtuse (C) right (D) can't be determined

ANS : B

91. In an equilateral triangle, the incentre, circumcentre, orthocentre and centroid are:
(A) concylic (B) coincident (C) collinear (D) none of these

ANS : B

92. Triangle ABC is such that AB = 9 cm, BC = 6 cm, AC = 7.5 cm. Triangle DEF is similar to ΔABC, If EF = 12 cm then DE is :
(A) 6 cm (B) 16 cm (C) 18 cm (D) 15 cm

ANS : C

93. In ΔABC, AB = 5 cm, AC= 7 cm. If AD is the angle bisector of $\angle A$. Then BD : CD is:
(A) 25 : 49 (B) 49 : 25 (C) 6 : 1 (D) 5 : 7

ANS : D

94. In a ΔABC, AB = AC and $AD \perp BC$, then :
(A) AB < AD (B) AB > AD (C) AB = AD (D) $AB \leq AD$

ANS : B

95. The difference between altitude and base of a right angled triangle is 17 cm and its hypotenuse is 25 cm. What is the sum of the base and altitude of the triangle is ?
(A) 24 cm (B) 31 cm (C) 34 cm (D) can't be determined

ANS : B

96. If AB, BC and AC be the three sides of a triangle ABC, which one of the following is true?
(A) AB – BC = AC (B) (AB – BC) > AC (C) (AB – BA) < AC (D) $AB^2 – BC^2 = AC^2$

ANS : C

97. If the medians of a triangle are equal, then the triangle is:
(A) right angled (B) isosceles (C) equilateral (D) scalene

ANS : C

98. The incentre of a triangle is determined by the:

(A) medians (B) angle bisectors

(C) perpendicular bisectors (D) altitudes

ANS : B

99. The point of intersection of the angle bisectors of a triangle is :

(A) orthocentre (B) centroid (C) incentre (D) circumcentre

ANS : C

100. A triangle PQR is formed by joining the mid-points of the sides of a triangle ABC. 'O' is the circumcentre of ΔABC, then for ΔPQR, the point 'O' is :

(A) incentre (B) circumcentre (C) orthocentre (D) centroid

ANS : C