CHAPTER NO 12 (HSSC – I)

1. Rigid rectilinear figure is ________

   A Circle B. Triangle C. Square D. All of these

2. In a triangle ABC, the measure of the three sides opposite to three angles are denoted by ____________.

   A. 1,2,3 B. A, B, C C. α, β, γ D. a, b, c

3. There are ________elements in a triangles.

   A. 3 B. 4 C. 5 D. 6

4. Number of elements of a traingle are

   A. 3 **B.** 4 **C.** 6 **D.** 8

5. If $a = 315, b = 346, c = 120$ then product of the three sides =?

   A. 721325 B. 12895 C. 1001 D. 13078800

6. The right angled traingle has one of its angles of measure

   A. 360° **B.** 270° **C.** 225° **D.** 90°

7. In a right triangle no angle is greater than

   A. 90° **B.** 80° **C.** 60° **D.** 45°

8. If one acute angle of a right angle triangle is 35^o, then the other acute angle is of measure:

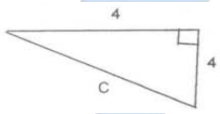
   A. 145^o **B.** 65^o **C.** 45^o **D.** 55^o

9. In a right angled triangle ABC with right angle at B, which one is true

   A. $a^2 + b^2 = c^2$ B. $a^2 - c^2 = b^2$

   C. $a^2 + c^2 = b^2$ D. $a^2 + b^2 = b^2$

10. The value of "c" in the given triangle is



   A. $4\sqrt{2}$ **B.** 16

   C. $8\sqrt{2}$ **D.** None of these

11. If you are looking a bird in the tree from the ground. then the angle form is the

   A. *Angle of elevation* **B.** *Angle of depression*

   C. *constant angle* **D.** *right angle*

12. If you are looking someone on the ground from the top of a hill. then the angle formed is the

   A. *Angle of elevation* **B.** *Angle of depression*

   C. *constant angle* **D.** *right angle*

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13. 8 m high tree has the shadow 8 m in length. The angle of elevation of the sun at that moment is ____________

A. 45^o B. 60^o

C. 15^o D. $None\ of\ these$

14. In a right angle triangle ABC, if the lengths of two non − perpendicular sides are 5 and 3, then what will be the length of the third side?

A. 3 B. 4.5 C. 4 D. $\sqrt{34}$

15. A man of 6 feet height casts a 2 feet shadow. What will be the angle of elelvation of the sun?

A. $70^o33'$ B. $71^o34'$ C. $71^o35'$ D. $71^o31'$

16. If in a right angled triangle base = 30.8, hypotenuse = 37.2, then cosα will be

A. 0.7032 B. 0.8280 C. 0.7513 D. 0.8655

17. Find the distance of a man from the foot of a 200m high tower if the angle of elevation of its top as observed by the man is 60°.

A. $115.47m$ B. $346.41m$ C. $240.23m$ D. $150m$

18. The anlge of elevation of the top of a tower from a point is 30°.If advancing 150m towards the foot of the tower,the angle increase to 30°Height of the tower=?

A $75m$ B. $75\sqrt{2}m$ C. $75\sqrt{3}m$ D. $150m$

19. The measure of the angle of depression of an airport as observed by a pilot while flying at a height of 3000m is 30°. How far is the plane from a point direct over the airport?

A. $\frac{3000}{\sqrt{3}}$ B. $3000\sqrt{3}$ C. $\frac{\sqrt{3}}{3000}$ D. $\frac{1}{3000\sqrt{3}}$

20. From the two successive points on a straight road 1000meters apart a man observes that the angles of elevation of the top of a tower directly ahead of him are of 30° & 60°. How high is the tower the road?

A $500m$ B. $1000m$ C. $500\sqrt{3}m$ D. $1956m$

21. $\frac{a}{\sin\alpha} = \frac{b}{\sin\beta} = \frac{c}{\sin\gamma}$ is law of

A. tangent **B.** cosine

C. sine **D.** cotangent

22. According to laws of sine;

A. $\frac{c}{\sin\alpha} = \frac{b}{\sin\beta}$ B. $\frac{a}{\sin\beta} = \frac{b}{\sin\alpha}$ C. $\frac{a}{\sin\alpha} = \frac{b}{\sin\beta}$ D. all of these

23. If b = 82, β = 57°, γ = 78°, find a

A 89.1 B. 69.13 C. 73.25 D. 51.74

24. In triangle ABC, if vertex A is at origin then the law of cosine is_______

A. $a^2 = b^2 + c^2 + 2bc\ cos\alpha$ B. $a^2 = b^2 + c^2 - 2bc\ cos\alpha$

C. $b^2 = a^2 + c^2 - 2ac\ cos\beta$ D. $a^2 = b^2 + c^2 - 2bc\ cos\beta$

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25. Which one is true?

A. $a^2 + b^2 - c^2 = 2abCos\alpha$ B. $b^2 = a^2 + c^2 = 2abCos\beta$

C. $\cos\alpha \frac{a^2+b^2+c^2}{2ab}$ D. $a^2 = b^2 + c^2 - 2bcCos\alpha$

26. Law of cosine $a^2 = b^2 + c^2 - 2bc\cos\alpha$ reduces to pythagoras theorem if

A. $\alpha = 90°$ **B.** $\alpha = 0$

C. $\alpha = 180°$ **D.** $\alpha = \mathbf{360}°$

27. If in a traingle ABC $\alpha = 90°$, then

A. $b^2 + c^2 = a^2$ **B.** $c^2 + a^2 = b^2$

C. $a^2 + b^2 = c^2$ **D.** $b^2 - c^2 = a^2$

28. If the ΔABC is right angled then the law of cosines reduces to

A. law of sines **B.** law of cosines

C. law of tangent **D.** pythagoras theorem

29. For a triangle with a, b, c and α, β, γ as measures of sides and opposite angles , $b^2 + c^2 - 2bc\cos\alpha =$

A. $\boldsymbol{a^2}$ **B.** b^2

C. $\boldsymbol{c^2}$ **D.** none of these

30. In any triangle ABC, a^2 is

A. $b^2 + c^2 - 2bc\cos\alpha$ **B.** $c^2 + a^2 - 2ca\cos\beta$

C. $a^2 + b^2 - 2ab\cos\gamma$ **D.** $b^2 + c^2 - 2bc\cos\alpha$

31. In any ΔABC, $c^2 =$

A. $a^2 + c^2 - 2ac\cos\beta$ **B.** $a^2 + b^2 - 2ab\cos\gamma$

C. $b^2 + c^2 - 2bc\cos\alpha$ **D.** $a^2 - c^2 - 2ac\cos\gamma$

32. Law of cosine is

A. $c^2 = a^2 + b^2 - 2abCos\gamma$ B. $a^2 + 2bcCos\alpha = b^2 + c^2$

C. $\cos\alpha = \frac{b^2+c^2+c^2}{2bc}$ D. all of these

33. If $a = 45, b = 34, \gamma = 45^{\circ}$, then $c = ?$

A 25.3 B. 31.89 C. 13.92 D. 29.93

34. law of tangent is

A. $\frac{a-b}{a+b} = \frac{\tan\frac{1}{2}(\alpha+\beta)}{\tan\frac{1}{2}(\alpha-\beta)}$ **B.** $\frac{a+b}{a-b} = \frac{\tan\frac{1}{2}(\alpha+\beta)}{\tan\frac{1}{2}(\alpha-\beta)}$

C. $\frac{a+b}{a-b} = \frac{\tan(\alpha+\beta)}{\tan(\alpha-\beta)}$ **D.** none of these

35. $\sin\frac{\alpha}{2} =$ ______

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A. $\frac{1+\cos\alpha}{2}$ B. $\frac{1-\sin\alpha}{2}$

C. $\frac{1+\sin\alpha}{2}$ D. $\sqrt{\frac{(s-b)(s-c)}{bc}}$

36. $\sqrt{\frac{(s-b)(s-c)}{bc}}$ =?

A. $\cos\frac{\gamma}{2}$ B. $\sin\frac{\beta}{2}$ C. $\sin\frac{\alpha}{2}$ D. $\cos\frac{\alpha}{2}$

37. $\sin\frac{\beta}{2}$ =?

A $\sqrt{\frac{(s-c)(s-a)}{ac}}$ B. $\sqrt{\frac{s(s-b)}{ac}}$ C. $\sqrt{\frac{(s-c)(s-a)}{s(s-b)}}$ D. $\sqrt{\frac{(s-b)(s-c)}{bc}}$

38. Which one is not true?

A. $\cos\frac{\alpha}{2} = \pm\sqrt{\frac{s(s-a)}{bc}}$ B. $\cos\frac{\beta}{2} = \pm\sqrt{\frac{s(s-b)}{ac}}$

C. $\sin\frac{\gamma}{2} = \pm\sqrt{\frac{s(s-b)}{ab}}$ D. $\tan\frac{\beta}{2} = \pm\sqrt{\frac{(s-a)(s-c)}{s(s-b)}}$

39. In any triangle ABC, with usual notations $\cos\frac{\alpha}{2} =$

A. $\sqrt{\frac{s(s-a)}{bc}}$ B. $\sqrt{\frac{(s-b)(s-c)}{bc}}$

C. $\sqrt{\frac{(s-b)(s-c)}{s(s-a)}}$ D. none of these

40. $\cos\frac{\alpha}{2}$ is equal to

A. $\sqrt{\frac{(s-b)(s-c)}{bc}}$ B. $\sqrt{\frac{s(s-a)}{bc}}$

C. $\sqrt{\frac{(s-a)(s-b)}{ab}}$ D. $\sqrt{\frac{s(s-B)}{ca}}$

41. $\cos\frac{\gamma}{2} =$

A. $\sqrt{\frac{s(s-c)}{ab}}$ B. $\sqrt{\frac{s(s-b)}{ac}}$

C. $\sqrt{\frac{s(s-a)}{(bc)}}$ D. none of these

42. $\frac{\sqrt{(s-b)(s-c)}}{\sqrt{s(s-a)}}$ =?

A. $\sin\frac{\alpha}{2}$ B. $\tan\frac{\beta}{2}$ C. $\tan\frac{\gamma}{2}$ D. $\tan\frac{\alpha}{2}$

43. For a triangle ABC with usual notations, $\sqrt{\frac{(s-a)(s-b)}{s(s-c)}}$

A. $\tan\gamma$ B. $\tan\frac{\gamma}{2}$ C. $\cot\gamma$ D. $\cot\frac{\gamma}{2}$

44. In any triangle ABC, $\frac{b^2+c^2-a^2}{2bc} =$

A. $\cos\alpha$ B. $\sin\alpha$ C. $\cos\beta$ D. $\sin\beta$

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45. $\frac{b^2+c^2-a^2}{2bc}=$ ________

A. $\cos\alpha$ B. $\cos\beta$ C. $\cos\gamma$ D. $\sin\alpha$

46. If a, b, c have their usual meanings, then $\frac{c^2+a^2-b^2}{2ac}$

A. $\cos\alpha$ **B.** $\cos\beta$ **C.** $\cos\gamma$ **D.** $\sin\beta$

47. $\cos\gamma=?$

A $\frac{a^2+b^2+c^2}{2ab}$ B. $\frac{c^2+b^2-a^2}{2bc}$ C. $\frac{2bc-b^2}{a^2}$ D. $\frac{a^2+b^2-c^2}{2ab}$

48. If for a ΔABC, $a=7, b=9, c=7$ then $\gamma=?$

A 40° B. 45° C. 50° D. 550°

49. The greatest angle is opposite to

A. smallesr side **B.** greatest side

C. same side **D.** right side

50. In a triangle $a=17, b=19, c=15$. The greatest angle is

A. α B. β C. γ D. none

51. In a triangle ABC, $a=11, b=9, c=19$, which angle is the smallest?

A. α B. β C. γ D. none

52. $\sin^2\left(\frac{\theta}{2}\right)=?$

A. $1+\cos\theta$ B. $\frac{1-\cos\theta}{2}$ C. $1-\cos\theta$ D. $\frac{1+\cos\theta}{2}$

53. If $a=9350, b=7145, c=8563$ then $\frac{\alpha}{2}$ is

A 36°app B. 41°app C. 39°app D. 47°app

54. In a triangle ABC, $a=15, b=25, c=20$, then the ratio of $\cos\beta$ to $\cos\gamma$ is

A 0 B. 1 C. 0.093 D. 1.342

55. If Δ is the area of a triangle ABC, then $\Delta=$

A. $\frac{1}{2}bc\sin\beta$ **B.** $\frac{1}{2}ab\sin\alpha$

C. $\frac{1}{2}bc\sin\alpha$ **D.** $ab\sin\alpha$

56. What is the area of triangle in Square Units if $b=21.6$ $c=30.2$ $\alpha=52^\circ40'$?

A. 295.3 **B.** 952.3 **C.** 259.3 **D.** 529.3

57. If for a triangle ABC, $a=3, b=4$, and $m<C=30^\circ$ then area of triangle $=?$

A 2 B. $\frac{1}{2}$ C. 3 D. $\frac{1}{3}$

58. In triangle ABC if one side $'c'$ and two angles α, β are given then Area $=$ ________

A. $\frac{a^2\sin\alpha\sin\beta}{2\sin\gamma}$ B. $\frac{b^2\sin\alpha\sin\gamma}{2\sin\beta}$

C. $\frac{c^2\sin\alpha\sin\beta}{2\sin\gamma}$ D. $\frac{c^2\sin\alpha\sin\beta}{\sin\gamma}$

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59. If the angles of a triangle are 30° and 45° and the included side is $(\sqrt{3}+1)$ then the area of the triangle is __________.

A $(\sqrt{3}+1)$ B. $\frac{\sqrt{3}+1}{3}$ C. $\frac{\sqrt{3}+1}{2}$ D. $3+\sqrt{3}$

60. Hero's Formula is used to calculate __________

A. Area of a triangle **B.** Sides of a triangle
C. Angles of triangle **D.** None of these

61. Area of a triangle ABC in terms of its sides is

A. $\sqrt{s(s-a)(s-b)(s-c)}$ **B.** $\frac{1}{2}bc\sin\alpha$

C. $\frac{1}{2}\frac{a^2\sin\beta\sin\gamma}{\sin\alpha}$ **D.** none of these

62. $\Delta=\sqrt{s(s-a)(s-b)(s-c)}$ is called:

A. law of sines **B.** law of cosines

C. law of tangents **D.** hero's formula

63. Hero's formula is used to calculate

A. area of Δ **B.** sides of Δ

C. angles of Δ **D.** none of these

64. Which one is known as Hero's formula?

A. $\Delta=\frac{1}{2}ab\sin\alpha$ B. $\Delta=\frac{a^2\sin\beta\sin\gamma}{2\sin\alpha}$

C. $\Delta=\sqrt{s(s-a)(s-b)(s-c)}$ D. $\Delta=\frac{abc}{4R}$

65. $\Delta=?$

A $\frac{b^2\sin\gamma\sin\alpha}{2\sin\beta}$ B. $\frac{1}{2}bc\sin\alpha$

C. $\sqrt{s(s-a)(s-b)(s-c)}$ D. all

66. The circle passing through the vertices of the triangle is called:

A. Unit Circle **B.** Circum Circle
C. In – Circle **D.** Escribed circle

67. Circum – centre of circle is the point of intersection of the ________

A. *Perpendiculars* B. *Right Bisectors*

C. *Bisectors of angles* C. *Bisectors of sides*

68. Radius of circle which passes through the vertices of a triangle is called:

A. *Circum radius* B. *In – radius*
C. *E – radius* D. *C – radius*

69. The circum centre of a triangle is a point

A. At which the angle bisectors meet

B. At which perpendicular bisectors of sides meet

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C. At which medians meet

D. At which altitudes meet

70. Circum radius of a triangle is given by

(I) $R = \frac{a}{2\sin\alpha}$ (II) $R = \frac{abc}{2_\Delta}$ (III) $R = \frac{a}{\sin\beta}$

A. I only B. I and II only C. II and III only D. II only

71. $\frac{abc}{4\Delta} =$

A. r_1 **B.** r_2 **C.** r_3 **D.** R

72. R =

A. $\frac{\Delta}{abc}$ **B.** $\frac{abc}{\Delta}$ **C.** $\frac{\Delta}{s}$ **D.** $\frac{a}{2\sin\alpha}$

73. R =?

A $\frac{ab}{2\sin\gamma}$ B. $\frac{b}{2\sin\beta}$ C. $\frac{bc}{2\sin\alpha}$ D. $\frac{abc}{\sin\alpha}$

74. R =

A. $\frac{c}{2\sin\gamma}$ **B.** $\frac{a}{2\sin\beta}$ **C.** $\frac{c}{2\sin\alpha}$ **D.** $\frac{b}{2\sin\alpha}$

75. If R is circumradius of a triangle ABC, Then R =?

A. $\frac{abc}{\Delta}$ B. $\frac{abc}{4}$ C. $\frac{abc}{4\Delta}$ D. $\frac{4\Delta}{abc}$

76. The value of R =

A. $\frac{abc}{s-a}$ **B.** $\frac{abc}{4\Delta}$

C. $\frac{4abc}{\Delta}$ **D.** $\frac{abc}{\Delta}$

77. In a triangle if a = 17, b = 10, c = 21, then what is the value of R?

A. $\frac{85}{8}$ **B.** $\frac{83}{8}$ **C.** $\frac{81}{8}$ **D.** $\frac{87}{8}$

78. Point of intersection of the angle bisectors of a triangle is called

A. circum circle **B.** orthocentre

C. in centre **D.** centroid

79. An Radius of inscribed circle is:

A. $r = \frac{\Delta}{S}$ **B.** $r = \frac{abc}{4\Delta}$ **C.** $r = \frac{S}{\Delta}$ **D.** $r = \frac{\Delta}{S-a}$

80. The in − radius "r" of a triangle is given by________

A. $s\Delta$ B. $\frac{\Delta}{s}$ C. $\frac{s}{\Delta}$ D. *None of these*

81. Radius of the inscribed circle is

A. $r = \frac{\Delta}{s}$ **B.** $r = \frac{abc}{4\Delta}$

C. $r = \frac{s}{\Delta}$ **D.** $r = \frac{s-a}{\Delta}$

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82. The in – radius "r" of a triangle is given by__________

A. $\frac{\Delta}{s}$ B. $\frac{abc}{4\Delta}$

C. $\frac{c}{2sin\gamma}$ D. $\frac{1}{2}bc\ sinA$

83. In radius r of a triangle is

A. $s\Delta$ **B.** $\frac{\Delta}{s}$

C. $\frac{s}{\Delta}$ **D.** none of these

84. Which one is true?

A. A circum circle touches all three sides of a Δ

B. The in center is the point of intersection of ⊥ bisectors of sides of a Δ.

C. The radius of escribed circle opposite to side C is $\frac{\Delta}{s-a}$

D. All three sides of a Δ are tangent to in circle

85. The sides of a triangle are 13, 14 and 15 then r =?

A $\frac{67}{8}$ B. $\frac{65}{4}$ C. 4 D. 24

86. For a triangle, Δ= 888 and s = 24, then radius of in circle is;

A 4300.85 B. 37 C. 190 D. 4860.8

87. $(s-b)\tan\frac{\beta}{2}=?$

A r_1 B. r C. r_2 D. r_3

88. $\cot\frac{\alpha}{2}.\cot\frac{\beta}{2}.\cot\frac{\gamma}{2}=?$

A Δ B. s^2 C. $\frac{\Delta}{s}$ D. $\frac{s}{\Delta}$

89. e radius corresponding to ∠A is

A. $\frac{\Delta}{s}$ **B.** $\frac{\Delta}{s-a}$ **C.** $\frac{\Delta}{s-b}$ **D.** $\frac{\Delta}{s-c}$

90. Radius of the escribed circle opposite to the vertex A is

A. $\frac{\Delta}{a}$ **B.** $\frac{\Delta}{s}$

C. $\frac{s-a}{\Delta}$ **D.** $\frac{\Delta}{s-a}$

91. $\frac{\Delta}{s-a}$ is the value of __________

A. R **B.** r **C.** r_1 **D.** r_2

92. r_1 =

A. $\frac{\Delta}{s-b}$ **B.** $\frac{\Delta}{s-a}$ **C.** $\frac{\Delta}{s-c}$ **D.** $\frac{s-a}{\Delta}$

93. $s\tan\frac{\alpha}{2}=?$

A R B. r C. r_1 D. r_2

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94. $r_2 =$

A. $\frac{\Delta}{s-b}$ **B.** $\frac{\Delta}{s-a}$ **C.** $\frac{\Delta}{s-c}$ **D.** $\frac{s-a}{\Delta}$

95. What is the value of r_2?

A. $s\tan\frac{r}{2}$ **B.** $s\tan\beta$ **C.** $s\tan\frac{\alpha}{2}$ **D.** $s\tan\frac{\beta}{2}$

96. The e – centre with respect to the vertex B is the point of intersection of the

A. External bisector of A and B and internal bisector of C

B. External bisectors of B and C and internal bisector of A

C. External bisectors of A and C and internal bisector of B

D. Internal bisector of A, B and C

97. radius corresponding to ∠C is

A. $\frac{\Delta}{s-a}$ **B.** $\frac{\Delta}{s}$ **C.** $\frac{\Delta}{s-c}$ **D.** ***none***

98. $r_3 =$

A. $\frac{\Delta}{s-b}$ **B.** $\frac{\Delta}{s-a}$ **C.** $\frac{\Delta}{s-c}$ **D.** $\frac{s-a}{\Delta}$

99. For an equilateral triangle which of the following must be true?

A $r = 4R$ B. $r = \frac{R}{2}$ C. $r = \frac{R}{3}$ D. None of these

100. If ABC is an equilateral triangle, then with the usual notations:

A. $3r = r_1 + r_2 + r_3$ **B.** $3r = r_1 r_2 r_3$

C. $r_1 r_2 r = r_3$ **D.** $r^3 = 3r_1 r_2 r_3$

101. For any equilateral triangle having sides of measures "a", the value of s is ____________

A. $\frac{3a}{2}$ **B.** $\frac{\sqrt{3}a}{2}$ **C.** $\frac{a}{\sqrt{3}}$ **D.** $\frac{3}{4a^2}$

102. In equilateral triangle , with usual notations, $r : R : r_1 =$

A. $1:2:4$ **B.** $1:3:2$

C. $1:2:3$ **D.** $2:3:4$

103. For an equilateral triangle which of the following is NOT True?

A $r : R : r_1 = 1:2:3$ B. $r : R : r_2 = 1:2:3$

C. $r : R : r_2 = 1:2:3:4$ D. $r : R : r_3 = 1:2:3$

104. In any triangle ABC $r_1 r_2 r_3 =$ ____________

A. rs^2 **B.** s^2 **C.** Δ^2 **D.** $r\Delta^2$

105. $r.r_1.r_2.r_3 =$ _______

A. s B. $s-a$ C. Δ D. Δ^2

106. With usual notaion , the value of $a - b + c$ is

A. $s + b$ **B.** $s - b$ **C.** $2s - b$ **D.** $2(s - b)$

107. Which one is false?

A. $\sin\alpha = \frac{2\Delta}{ab}$ B. $r_1 = s\tan\frac{\alpha}{2}$

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C.	$r=(s-a)\tan\frac{\alpha}{2}$			D.	$\Delta = \frac{a^2 \sin\beta \sin\gamma}{2\sin\alpha}$		

108. $r_1r_2 + r_2r_3 + r_3r_1 =$

A.	Δ^2	B.	s^2	C.	$\frac{\Delta}{s}$	D.	$\frac{s}{\Delta}$

109. $r_1 + r_2 + r_3 - r = ?$

A	R	B.	$4R$	C.	r	D.	$4r$

110. $\sqrt{rr_1r_2r_3} = ?$

A	$\sin\alpha$	B.	$\frac{1}{2}bc\sin\beta$	C.	$\frac{\Delta}{2abc}$	D.	Δ

111. If the angles of a triangle are in ratio 1: 2: 3 then the sides are in ratio__________

A	$2:3:1$	B.	$\sqrt{3}:2:1$	C.	$2:\sqrt{3}:1$	D.	$1:\sqrt{3}:2$

112. The point of concurrency of the medians of a triangle is called

A.	circum circle	**B.**	orthocentre
C.	in centre	**D.**	centroid

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