A   **Write the answer of the following questions. [Each carries 1 Mark]**   **[43]**

1. In a musical chair game, the person playing the music has been advised to stop playing the music at any time within 2 minutes after she starts playing. What is the probability that the music will stop within the first half-minute after starting ?

2. India reached in Semifinal match in world cup cricket match. Other than India three more team Australia, Newzeland and England also plays the game then .... is the probability of an event that India win the world cup.

   (A) $\dfrac{1}{4}$ (B) 4   (C) 8   (D) $\dfrac{1}{8}$

3. Probability of complement of the impossible events is ....

   (A) 1   (B) 0   (C) $\dfrac{2}{7}$ (D) $\dfrac{1}{7}$

4. If $P(A) : P(\overline{A}) = 4:1$ then $P(\overline{A}) = $.......... $\left(\dfrac{1}{4}, \dfrac{4}{5}, \dfrac{1}{5} \right)$

5. $\overline{A}$ is complement event of A. If $P(A) - P(\overline{A}) = 0.8$ then find P(A).

6. There is an empirical relationship between the three measures of central tendency $3M = Z + 2\overline{x}$ then $\dfrac{Z - M}{M - \overline{x}} = $.......... .

   (A) 0   (B) 1   (C) –2   (D) 2

7. If the difference of mode and median is 24 then find the difference of median and mean.

8.
Class	5–14	14–23	23–32	32–41	41–50	50–59	59–68
Frequency	5	11	x	53	y	16	0

   The cumulative frequency of the class $32 - 41$ is 91 then find x.

9. For some data $\displaystyle\sum_{1}^{6} x_i = 270$ and $\displaystyle\sum_{1}^{11} x_i = 228$ then find 6th observation.

10. Find the deviation of 3, 5, 6, 7, 8, 10, 11, 14 from mean.

11. Find the mean of all factors of 12.

12. Find the value of $\Sigma(x_i - \overline{x})$.

13. The volume of the cone is 660 cm^3. If its radius is 6 cm find the slant height of the cone.

14. If perimeter and area of the circle are equal then diameter of the circle is .... unit.
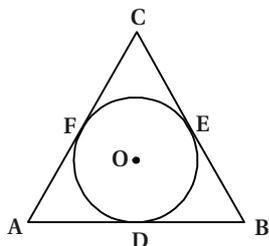
   (A) 4   (B) 2   (C) 8   (D) 1

15. In the given figure, AB = 12 cm, BC = 8 cm and AC = 10 cm, then AD = ... cm.
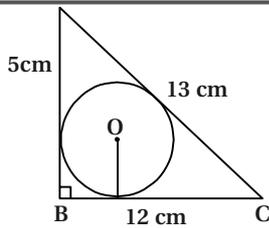
   (A) 5

   (B) 4

   (C) 6

   (D) 7

16. In $\triangle ABC$ $\angle B$ is a right angle. AB = 5 cm, BC = 15, find the radius of the circle which touches all the sides of $\triangle ABC$.

17. sin 2A = 2 sin A is true when A = ...

(A) 0° (B) 30° (C) 45° (D) 60°

18. If θ is an acute angle and $b \sin\theta = a \cos\theta$ then $\dfrac{a \sin\theta - b \cos\theta}{a \sin\theta + b \cos\theta}$ = ...

(A) $\dfrac{a^2 + b^2}{a^2 - b^2}$ (B) $\dfrac{a^2 - b^2}{a^2 + b^2}$ (C) $\dfrac{a + b}{a - b}$ (D) $\dfrac{a - b}{a + b}$

19. $\sin^2(3x + 30) + \cos^2(2x + 45) = 1$ then x = ... (15, 17, 14)

20. If $7 \cos^2\theta + 3\sin^2\theta = 4$ then find $\cot\theta$.

21. Find the ratio in which the y-axis divides the line segment joining the points (5, – 6) and (–1, – 4). Also find the point of intersection.

22. Find a relation between x and y such that the point (x, y) is equidistant from the points (7, 1) and (3, 5).

23. The distance of the point P(–5, 7) from the origin is .... $\left(74, 49, \sqrt{74}\right)$

24. If $A\left(\dfrac{m}{2}, 5\right)$ is the midpoint of the line segment joining Q(–6, 7) and R(–2, 3) then find the value of m.

25. State whether the following quadrilaterals are similar or not :
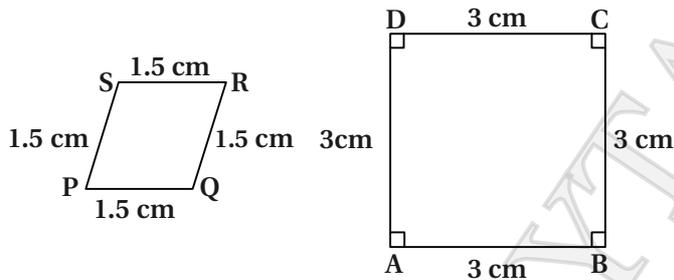
26. In Δ ABC parallel line to BC intersect AB and AC at D and E respectively then AB = ..., DB = ... and AE = ... (5.64, 2.55, 1.55; 1.55, 4.65, 1.05; 22.5, 1.05, 5.64)
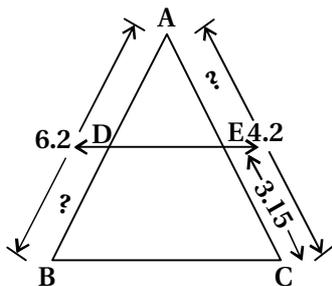
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27. The arithmetic sum of first n odd natural number is $n(n + 1)$.

28. The arithmetic sum of first n even number is n^2.

29. For an arithmetic sequence if $Sn = 5n^2 - 3n$ then $a_n = 10n - 8$.

30. $2k + 1$, 13, $5k - 3$ are consecutive terms of an AP then find k.

(A) 17 (B) 13 (C) 4 (D) 9

31. $1 + 2 + 3 + ... + 50 + 49 + 48 + ... + 1$ = ...

(A) 2499 (B) 2500 (C) 2501 (D) 2599

32. ...... of the following mathematician gives the general formula for solution of quadratic equation.

(A) Bhaskaracharya (B) Euclid (C) Sridharcharya (D) Aryabhatta

33. Roots of the quadratic equation $\dfrac{x}{k} = \dfrac{k}{x}$ are ......

(A) $k, -k$ (B) $-k, -k$ (C) k, k (D) $k^2, -k^2$

34. If $x + \dfrac{1}{x} = 2$ then $x^{2019} + \dfrac{1}{x^{2020}} = $ .... $(2, -1, 1)$

35. If 3 is the solution of the quadratic equation $2x^2 - kx + 9 = 0$ then find the value of k.

36. For a quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ if $b^2 - 4ac < 0$ then write the nature of the roots.

37. If the roots of the equation $12x^2 - 25x + k = 0$ are reciprocal of each other then find k.

38. $51x + 49y = 150$ and $49x + 51y = 50$ then $x - y = $ .... (Without finding x, y) $(100, 150, 50)$

39. x years age the age of Virat Kohli was y years. What will be his age after 2 years ?

40.

	(A)	(B)
i)	The graph of $x = 0$ is	(a) X-axis and Y-axis
ii)	The graph of $y = 0$ is	(b) X-axis
		(c) Y-axis

41. α, β and γ are the roots of cubic polynomial $ax^3 + bx^2 + cx + d$ then $\dfrac{1}{\alpha\beta} + \dfrac{1}{\beta\gamma} + \dfrac{1}{\gamma\alpha} = $ ....

(A) $\dfrac{b}{d}$ (B) $\dfrac{d}{b}$ (C) $\dfrac{c}{d}$ (D) $-\dfrac{c}{d}$

42. α and β are roots of polynomial $p(x) = x^2 - 3x + 2m$ such that $\alpha + \beta = \alpha \cdot \beta$ then $m = $ ...... $\left(\dfrac{2}{3}, \dfrac{1}{3}, \dfrac{3}{2}\right)$

43. $a = pq^2$ and $b = p^3q$ where p and q are prime numbers HCF (a, b) = LCM (a, b) = ... (p^2q^3, p^3q^2, p^2q^2)

B   **Write the answer of the following questions. [Each carries 2 Marks]**   **[42]**

44. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting

(i) a king of red colour   (ii) a face card

(iii) a red face card   (iv) the jack of hearts

(v) a spade   (vi) the queen of diamonds

45. Marks obtained out of 50, by 100 students in a test are given in the frequency table given below. Find the median of the data.

Marks obtained	20	29	28	33	42	38	43	25
No. of students	6	28	24	15	2	4	1	20

46. A hemispherical depression is cut out from one face of a cubical wooden block such that the diameter l of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid. (take $\pi = \dfrac{22}{7}$)

47. Area of a circle is 616 subtends an angle of 60° at the centre then find the length of the arc.

48. When the angle of elevation of the sun decreases from 30° to 45°, the length of the shadow of the building decreases x m. If the height of the building is 100 m, find the value of x.

49.

|	(A)	(B)
i)	One of the angle of a right angle triangle is 30°. The length of its opposite side is .... times its hypotenuse.	(a) two
ii)	One of the angle of right angle triangle is 60°. The length of its opposite side is .... times its hypotenuse.	(b) half
		(c) $\dfrac{\sqrt{3}}{2}$

50. Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer :

$(-3, 5)$, $(3, 1)$, $(0, 3)$, $(-1, -4)$

51. Find the coordinates of the points of trisection of the line segment joining $(4, -1)$ and $(-2, -3)$.

52. A girl of height 90 cm is walking away from the base of a lamp-post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds.
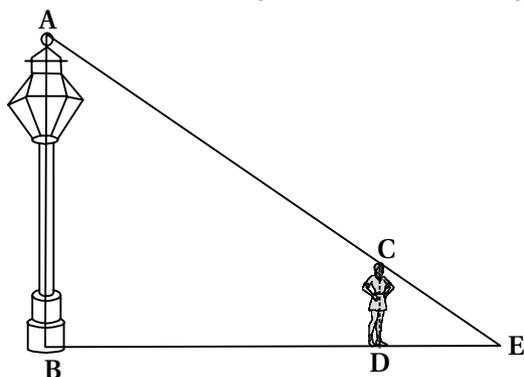
53. The diagonals of a quadrilateral ABCD intersect each other at the point O such that $\dfrac{AO}{BO} = \dfrac{CO}{DO}$ Show that ABCD is a trapezium.

54. How many terms of the AP : 24, 21, 18,.... must be taken so that their sum is 78 ?

55. Check whether 301 is a term of the list of numbers 5, 11, 17, 23, . . .

56. 200 logs are stacked in the following manner : 20 logs in the bottom row, 19 in the next row, 18 in the row next to it and so on (see Fig.). In how many rows are the 200 logs placed and how may logs are in the top now ?
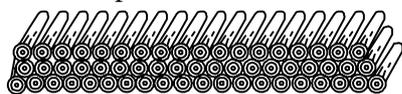
57. A pole has to be erected at a point on the boundary of a circular park of diameter 13 metres in such a way that the differences of its distances from two diametrically opposite fixed gates A and B on the boundary is 7 metres. Is it possible to do so ? If yes, at what distances from the two gates should the pole be erected ?

58. Check whether the following are quadratic equation : $(x + 2)^3 = x^3 - 4$

59. Find the root of the following quadratic equation by factorisation : $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

60. Priyanka's mother is 20 years older than her. The product of their ages 5 years from now will be 300 we would to like to find Priyanka's present age keep if in mind, construct the quadratic equation.

	(A)	(B)
i)	Which Indian Mathematician gave the formula to find the solution of the quadratic equation $ax^2 + bx + c = 0$ by perfect square method.	(a) Brahmagupta
ii)	Who gave the method to solve the quadratic equation in Hindu religion ?	(b) Sridharacharya
		(c) Bhaskaracharya.

61.

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62. For what value of k will the following pair of linear equations have infinitely many solutions.
$kx + 3y - (k - 3) = 0$; $12x + ky - k = 0$

63. Find the zeroes of the following quadratic polynomial and verify the relationship between the zeroes and the coefficients : $6x^2 - 3 - 7x$

64. Prove that $3 + 2\sqrt{5}$ is irrational.

C Write the answer of the following questions. [Each carries 3 Marks]   [57]

65. A petrol pump owners wants to analyses the daily need of diesel at the pump. For this he collected the data of vehicles visited in 1 hour. The following frequency distribution table shows the classification of the number of vehicles and quantity of diesel filled in them.

Diesel filled (in lit)	3-5	5-7	7-9	9-11	11-13
No. of vehicles					

1) Average diesel required for a vehicle is

    (A) 8.15 l (B) 6 l (C) 10600 l (D) 5.5 l

2) If approximately 2000 vehicles comes daily at the petrol pump, then how much liters of diesel two pump should have ?

    (A) 16200 l (B) 16300 l (C) 10600 l (D) 15000 l

3) The sum of upper and lower limit of median class is ....

    (A) 22   (B) 10   (C) 16   (D) None of above

4) If the median of given data is 8 l then mode will be equal to :

   (A) 7.5 l (B) 7.7 l (C) 5.7 l (D) 8 l

66. 1000 litres = ... cubic metre $\left(1, 10, \dfrac{1}{2}\right)$

67. A cylinder is filled half with water. If we add 10 l water in it, the height of the water is increased up to 0.60 part what is the capacity of the cylinder ?

68. A round table cover has six equal designs as shown in Figure. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of ₹ 0.35 per cm^2. (Use $\sqrt{3}$ = 1.7)
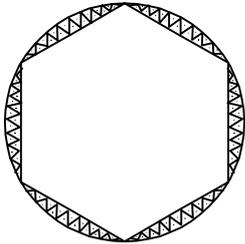
69. Two tangents TP and TQ are drawn to a circle with centre O from an external point T.
Prove that ∠PTQ = 2∠OPQ.

70. Prove that the parallelogram circumscribing a circle is a rhombus.

71. From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30° and 45°, respectively. If the bridge is at a height of 3 m from the banks, find the width of the river.
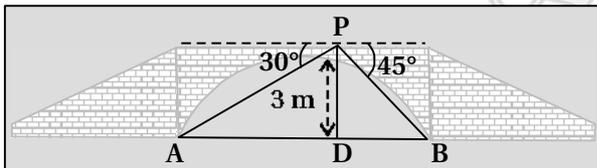
72. A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60°. After some time, the angle of elevation reduces to 30° (see Figure). Find the distance travelled by the balloon during the interval.
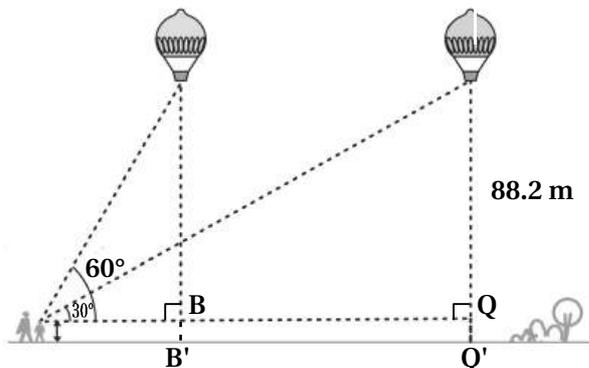
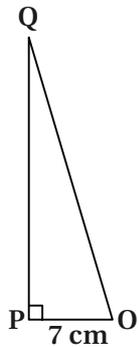**73.** Prove that $\dfrac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \dfrac{1}{\sec\theta - \tan\theta}$ using the identity $\sec^2\theta = 1 + \tan^2\theta$

74. In Δ OPQ, right-angled at P, OP = 7 cm and OQ – PQ = 1 cm (see Fig.). Determine the values of sin Q and
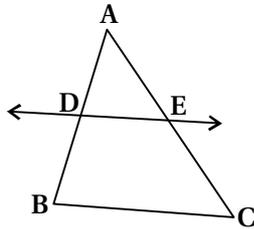
cos Q.

75. Prove the following identitie, where the angle involved is acute angle for which the expression is defined : $\dfrac{\tan\theta}{1-\cot\theta} + \dfrac{\cot\theta}{1-\tan\theta} = 1 + \sec\theta \cdot \csc\theta$

[Hint : Write the expression in terms of sin θ and cos θ]

76. If a line intersects sides AB and AC of a Δ ABC at D and E respectively and is parallel to BC prove that $\dfrac{AD}{AB} = \dfrac{AE}{AC}$ (see figure)


77. If AD and PM are medians of triangles ABC and PQR, respectively where Δ ABC ~ Δ PQR, prove that $\dfrac{AB}{PQ} = \dfrac{AD}{PM}$

78. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find :

(i)   the production in the 1st year

(ii) the production in the 10th year

(iii) the total production in first 7 years

79. A ladder has rungs 25 cm apart (see Fig.). The rungs decrease uniformly in length from 45 cm at the bottom to 25 cm at the top. If the top and the bottom rungs are $2\dfrac{1}{2}$ m apart, what is the length of the wood required for the rungs ?
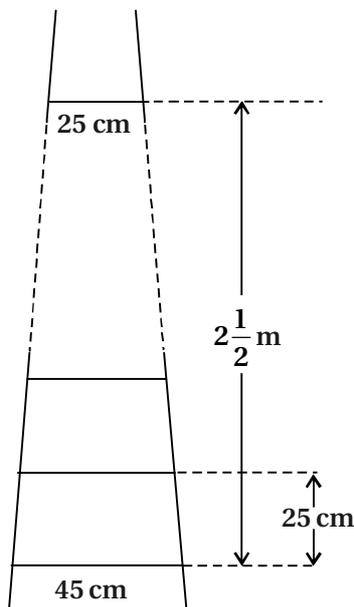
80. The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there ?

81. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the X-axis, and shade the triangular region.

82. Ravi scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Ravi would have scored 50 marks. How many questions were there in the test ?

83. Find the zeroes of the following quadratic polynomial and verify the relationship between the zeroes and the coefficients : $t^2 - 15$

D **Write the answer of the following questions.** [Each carries 4 Marks]   [20]

84. (i) Find the probability that a year selected at random will contain 53 Sunday. Also find the probability that in a leap year.

   (ii) February has 5 Friday.

85. A life insurance agent found the following data for distribution of ages of 100 policy holders. Calculate the median age, if policies are given only to persons having age 18 years onwards but less than 60 year.

Age (in years)	Number of policy holders
Below 20	2
Below 25	6
Below 30	24
Below 35	45
Below 40	78
Below 45	89
Below 50	92
Below 55	98
Below 60	100

86. Shanta runs an industry in a shed which is in the shape of a cuboid surmounted by a half cylinder (see Fig.). If the base of the shed is of dimension 7 m × 15 m, and the height of the cuboidal portion is 8 m, find the volume of air that the shed can hold. Further, suppose the machinery in the shed occupies a total space of 300 m³, and there are 20 workers, each of whom occupy about 0.08 m³ space on an average. Then, how much air is in the shed ? (Take $\pi = \frac{22}{7}$)
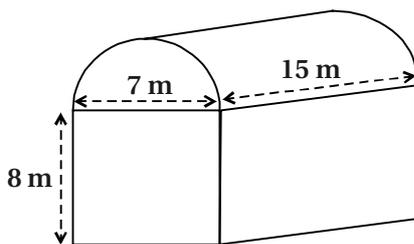
87. Find the area of the segment AYB shown in figure, if radius of the circle is 21 cm and ∠AOB = 120°. (Use $\pi = \frac{22}{7}$)
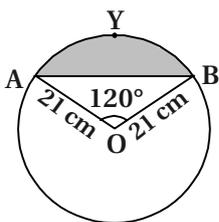
88. Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that Δ ABC ~ Δ PQR.

Strategy for 10th GSEB Mathematics Exam

Rest Well Before the Exam – Ensure you take proper rest the night before the exam so that your mind remains fresh and focused for calculations, theorem proofs, constructions, and problem-solving.

Start Your Morning with Light Revision – Revise important formulas, identities, theorems, constructions steps, graphs, and key concepts from each chapter to refresh your memory.

Understand the Purpose of the Mathematics Exam – The paper tests your conceptual understanding, step-wise problem-solving ability, accuracy in calculations, knowledge of formulas and theorems, logical reasoning, and proper presentation of solutions.

Stay Calm and Confident – Maintain a positive attitude and attempt each question carefully without panic. Read every question properly, especially word problems and case-based questions, before solving.

Utilize the Reading Time Wisely – Use the 15-minute reading time to carefully go through the question paper, identify easy and scoring questions, observe internal choices, check case-study questions, and plan the order in which you will attempt the paper.

Manage Your Time Effectively – Distribute time properly among MCQs, short answers, long answers, case-based questions, constructions, and graph-based questions. Avoid spending too much time on one question. Try to complete the paper 15–20 minutes early for revision.

Practice Formulas and Step-wise Presentation – Revise all important formulas and identities. In the exam, write given data, formula used, proper substitution, calculation steps, and final answer with correct units (where required). Highlight final answers clearly.

Recheck Your Answer Sheet – Carefully verify calculations, signs (+/–), units, theorem statements, construction steps, graphs, and final answers. Ensure all questions are attempted as per instructions and presentation is neat and systematic.

ALL THE BEST

New Batches at AAYTAN for Academic Year 2026-27 Start Dates

STANDARD	COMMENCING DATES
11th PCMB	19th March 2026
12th PCMB	12th March 2026
8th CBSE	02nd April 2026
9th / 10th CBSE	26th March 2026
8th / 9th / 10th GSEB	23rd April 2026

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