

SAMPLE QUESTION PAPER

Class X Session 2024-25

MATHEMATICS STANDARD (Code No.041) (FOR VISUALLY IMPAIRED)

TIME: 3 hours

MAX.MARKS: 80

General Instructions:

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Questions no. 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Questions no. 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 36-38 are case study based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. All Questions are compulsory. However, an internal choice in 2 Question of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required.
10. Take $\pi = 22/7$ wherever required if not stated.
11. Use of calculators is not allowed.

Section A		
Section A consists of 20 questions of 1 mark each.		
1.	The graph of a quadratic polynomial $p(x)$ passes through the points $(-6,0)$, $(0, -30)$, $(4,-20)$ and $(6,0)$. The zeroes of the polynomial are A) - 6,0 B) 4, 6 C) - 30,-20 D) - 6,6	1
2.	The value of k for which the system of equations $3x-ky= 7$ and $6x+ 10y =3$ is inconsistent, is A) -10 B) -5 C) 5 D) 7	1
3.	Which of the following statements is not true? A) A number of secants can be drawn at any point on the circle. B) Only one tangent can be drawn at any point on a circle. C) A chord is a line segment joining two points on the circle D) From a point inside a circle only two tangents can be drawn.	1
4.	If n th term of an A.P. is $7n-4$ then the common difference of the A.P. is A) 7 B) $7n$ C) - 4 D) 4	1
5.	The radius of the base of a right circular cone and the radius of a sphere are each 5 cm in length. If the volume of the cone is equal to the volume of the sphere then the height of the cone is A) 5 cm B) 20 cm C) 10 cm D) 4 cm	1

6.	<p>If $\tan\theta = \frac{5}{2}$ then $\frac{4 \sin\theta + \cos\theta}{4 \sin\theta - \cos\theta}$ is equal to</p> <p>A) $\frac{11}{9}$ B) $\frac{3}{2}$ C) $\frac{9}{11}$ D) 4</p>	1												
7.	<p>Maximum number of common tangents that can be drawn to two circles intersecting at two distinct points is</p> <p>A) 4 B) 3 C) 2 D) 1</p>	1												
8.	<p>A quadratic polynomial having zeroes $-\sqrt{\frac{5}{2}}$ and $\sqrt{\frac{5}{2}}$ is</p> <p>A) $x^2 - 5\sqrt{2}x + 1$ B) $8x^2 - 20$ C) $15x^2 - 6$ D) $x^2 - 2\sqrt{5}x - 1$</p>	1												
9.	<p>Consider the frequency distribution of 45 observations.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>Class</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> </tr> <tr> <td>Frequency</td> <td>5</td> <td>9</td> <td>15</td> <td>10</td> <td>6</td> </tr> </tbody> </table> <p>The upper limit of median class is</p> <p>A) 20 B) 10 C) 30 D) 40</p>	Class	0-10	10-20	20-30	30-40	40-50	Frequency	5	9	15	10	6	1
Class	0-10	10-20	20-30	30-40	40-50									
Frequency	5	9	15	10	6									
10.	<p>A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that OQ = 13 cm. Length PQ is</p> <p>A) 10 cm B) 12 cm C) 24 cm D) 26cm</p>	1												
11.	<p>The roots of the quadratic equation $x^2 + x - 1 = 0$ are</p> <p>A) Irrational and distinct B) not real C) rational and distinct D) real and equal</p>	1												
12.	<p>If $\theta = 30^\circ$ then the value of $3\tan\theta$ is</p> <p>A) 1 B) $\frac{1}{\sqrt{3}}$ C) $\frac{3}{\sqrt{3}}$ D) not defined</p>	1												
13.	<p>The volume of a solid hemisphere is $\frac{396}{7} \text{ cm}^3$. The total surface area of the solid hemisphere (in sq.cm) is</p> <p>A) $\frac{396}{7}$ B) $\frac{594}{7}$ C) $\frac{549}{7}$ D) $\frac{604}{7}$</p>	1												
14.	<p>In a bag containing 24 balls, 4 are blue, 11 are green and the rest are white. One ball is drawn at random. The probability that drawn ball is white in colour is</p> <p>A) $\frac{1}{6}$ B) $\frac{3}{8}$ C) $\frac{11}{24}$ D) $\frac{5}{8}$</p>	1												
15.	<p>The point on the x-axis nearest to the point (-4, -5) is</p> <p>A) (0, 0) B) (-4, 0) C) (-5, 0) D) $(\sqrt{41}, 0)$</p>	1												
16.	<p>Which of the following gives the middle most observation of the data?</p> <p>A) Median B) Mean C) Range D) Mode</p>	1												

17.	A point on the x-axis divides the line segment joining the points A(2, -3) and B(5, 6) in the ratio 1:2. The point is A) (4, 0) B) $(\frac{7}{2}, \frac{3}{2})$ C) (3, 0) D) (0,3)	1
18.	A card is drawn from a well shuffled deck of playing cards. The probability of getting red face card is A) $\frac{3}{13}$ B) $\frac{1}{2}$ C) $\frac{3}{52}$ D) $\frac{3}{26}$	1
	DIRECTION: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R) . Choose the correct option A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) B) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) C) Assertion (A) is true but reason (R) is false. D) Assertion (A) is false but reason (R) is true.	
19.	Assertion (A): HCF of any two consecutive even natural numbers is always 2. Reason (R): Even natural numbers are divisible by 2.	1
20.	Assertion (A): If the radius of sector of a circle is reduced to its half and angle is doubled then the perimeter of the sector remains the same. Reason (R): The length of the arc subtending angle θ at the centre of a circle of radius $r = \frac{\pi r \theta}{180}$.	1
	Section B	
	Section B consists of 5 questions of 2 marks each.	
21.	(A) Find the H.C.F and L.C.M of 480 and 720 using the Prime factorisation method. OR (A) The H.C.F of 85 and 238 is expressible in the form $85m - 238$. Find the value of m.	2
22.	(A) Two dice are rolled together bearing numbers 4, 6, 7, 9, 11, 12. Find the probability that the product of numbers obtained is an odd number OR (B) How many positive three digit integers have the hundredths digit 8 and unit's digit 5? Find the probability of selecting one such number out of all three digit numbers.	2
23.	Evaluate: $\frac{2\sin^2 60^\circ - \tan^2 30^\circ}{\sec^2 45^\circ}$	2
24.	Find the point(s) on the x-axis which is at a distance of $\sqrt{41}$ units from the point (8, -5).	2
25.	Show that the points A(-5,6), B(3, 0) and C(9, 8) are the vertices of an isosceles triangle.	2

	Section C	
	Section C consists of 6 questions of 3 marks each.	
26.	<p>(A) Prove that any line parallel to the parallel sides of a trapezium divides the non-parallel sides proportionally.</p> <p style="text-align: center;">OR</p> <p>(B) If $\Delta ABC \sim \Delta DEF$ and $AB=4\text{cm}, DE=6\text{cm}, EF=9\text{cm}$ and $FD=12\text{cm}$, then find the perimeter of ΔABC</p>	3
27.	The sum of two numbers is 18 and the sum of their reciprocals is $\frac{9}{40}$. Find the numbers.	3
28.	If α and β are zeroes of a polynomial $6x^2 - 5x + 1$ then form a quadratic polynomial whose zeroes are α^2 and β^2 .	3
29.	If $\cos\theta + \sin\theta = 1$, then prove that $\cos\theta - \sin\theta = \pm 1$	3
30.	<p>(A) The minute hand of a wall clock is 18 cm long. Find the area of the face of the clock described by the minute hand in 35 minutes.</p> <p style="text-align: center;">OR</p> <p>(B) Find the area of minor sector of a circle with radius 6cm, if the angle subtended by major arc at the centre is 300°. (use $\pi = 3.14$)</p>	3
31.	Prove that $\sqrt{3}$ is an irrational number.	3
	Section D	
	Section D consists of 4 questions of 5 marks each	
32.	<p>(A) The monthly incomes of A and B are in the ratio 8:7 and their expenditures are in the ratio 19:16. If each saves ₹ 2500 per month, find the monthly income of each.</p> <p style="text-align: center;">OR</p> <p>(B) Places A and B are 180 km apart on a highway. One car starts from A and another from B at the same time. If the car travels in the same direction at different speeds, they meet in 9 hours. If they travel towards each other with the same speeds as before, they meet in an hour. What are the speeds of the two cars?</p>	5
33.	<p>Prove that the lengths of tangents drawn from an external point to a circle are equal.</p> <p>Using above result, prove that if ABC is an isosceles triangle in which $AB = AC$ is circumscribed about a circle, the base BC is bisected by the point of contact.</p>	5
34.	A boy whose eye level is 1.35 m from the ground, spots a balloon moving with the wind in a horizontal line at some height from the ground. The angle of elevation of the	5

	balloon from the eyes of the boy at an instant is 60° . After 12 seconds, the angle of elevation reduces to 30° . If the speed of the wind is 3m/s then find the height of the balloon from the ground. (Use $\sqrt{3}= 1.73$)																																	
35.	<p>Find the mean and median of the following data:</p> <table border="1"> <tr> <td>Class</td> <td>85-90</td> <td>90-95</td> <td>95-100</td> <td>100-105</td> <td>105-110</td> <td>110-115</td> </tr> <tr> <td>frequency</td> <td>15</td> <td>22</td> <td>20</td> <td>18</td> <td>20</td> <td>25</td> </tr> </table> <p style="text-align: center;">OR</p> <p>The monthly expenditure on milk in 200 families of a Housing Society is given below</p> <table border="1"> <tr> <td>Monthly Expenditure (in Rs.)</td> <td>1000-1500</td> <td>1500-2000</td> <td>2000-2500</td> <td>2500-3000</td> <td>3000-3500</td> <td>3500-4000</td> <td>4000-4500</td> <td>4500-5000</td> </tr> <tr> <td>Number of families</td> <td>24</td> <td>40</td> <td>33</td> <td>x</td> <td>30</td> <td>22</td> <td>16</td> <td>7</td> </tr> </table> <p>Find the value of x and also find the mean expenditure</p>	Class	85-90	90-95	95-100	100-105	105-110	110-115	frequency	15	22	20	18	20	25	Monthly Expenditure (in Rs.)	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500	3500-4000	4000-4500	4500-5000	Number of families	24	40	33	x	30	22	16	7	5
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Section E consists of 3 case study based questions of 4 marks each.																																		
36.	<p>Ms. Sheela visited a store near her house and found that the glass jars are arranged one above the other in a specific pattern.</p> <p>On the top layer there are 3 jars. In the next layer there are 6 jars. In the 3rd layer from the top there are 9 jars and so on till the 8th layer.</p> <p>On the basis of the above situation answer the following questions.</p> <p>(i) Write an A.P whose terms represent the number of jars in different layers starting from top. Also, find the common difference.</p> <p>(ii) Is it possible to arrange 34 jars in a layer if this pattern is continued? Justify your answer.</p> <p>(iii) (A) If there are 'n' number of rows in a layer then find the expression for finding the total number of jars in terms of n. Hence find S_8.</p> <p style="text-align: center;">OR</p> <p>(iii) (B) The shopkeeper added 3 jars in each layer. How many jars are there in the 5th layer from the top?</p>	<p>1</p> <p>1</p> <p>2</p> <p>2</p>																																

37.	<p>A student is trying to find the height of a tower near his house. He is using the properties of similar triangles. The height of building is 20 m when it casts a shadow 10 m long on the ground. At the same time, the tower casts a shadow 50 m long on the ground. At the same time, his house casts 20 m shadow on the ground. On the basis of the above situation answer the following questions.</p> <p>(i) What is the height of the tower?</p> <p>(ii) What is the height of student's house?</p> <p>(iii) (A)What will be the length of the shadow of the tower when building casts a shadow of 12 m at the same time?</p> <p style="text-align: center;">OR</p> <p>(B) When the tower casts a shadow of 40 m, at that time what will be the length of the shadow of Student's house?</p>	<p>1</p> <p>1</p> <p>2</p> <p>2</p>
38.	<p>Metallic silos are used by farmers for storing grains. Farmer Girdhar has decided to build a new metallic silo to store his harvested grains. It is in the shape of a cylinder mounted by a cone.</p> <p>Dimensions of the conical part of a silo is as follows: Radius of base = 1.5 m Height = 2 m</p> <p>Dimensions of the cylindrical part of a silo is as follows: Radius = 1.5 m Height = 7 m</p> <p>On the basis of the above information answer the following questions.</p> <p>(i) Calculate the slant height of the conical part of one silo.</p> <p>(ii) Find the curved surface area of the conical part of one silo.</p> <p>(iii)(A) Find the cost of metal sheet used to make the curved cylindrical part of 1 silo at the rate of ₹2000 per m^2.</p> <p style="text-align: center;">OR</p> <p>(iii) (B) Find the total capacity of one silo to store grains.</p>	<p>1</p> <p>1</p> <p>2</p> <p>2</p>