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— SCHOOL SECTION —

CBSE CLASS 10 – MATHEMATICS Qs PAPER 2025_26

Series JMS/2

SET - 3

Code No. **2/4/12**

Roll No. | | | | | | | |

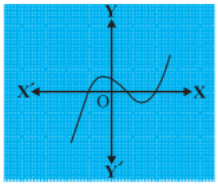
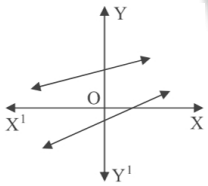
Candidates must write the Code on the title page of the answer-book

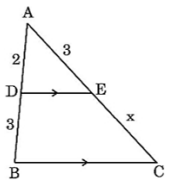
General Instructions:

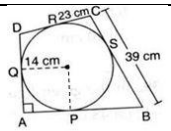
1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1 - 18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion - Reason based questions of 1 M each.
4. In Section B, Questions no. 21 - 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 Questions 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.

MATHEMATICS (041)

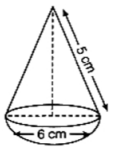
Time allowed : 3 hours *Maximum Marks : 80*

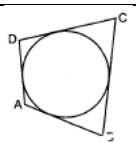
	Section A	
1	The HCF of 867 and 255 is a) 35 b) 51 c) 25 d) 55	**[1]**
2	Find the number of zeroes of p(x) in thefigure given below.  a) 0 b) 3 c) 2 d) 1	**[1]**
3	In the given figure, graphs of two linear equations are shown. The pair of these linear equations is:  a) consistent with infinitely many solutions. b) inconsistent but can be made consistent by extending these lines. c) consistent with unique solution. d) inconsistent.	**[1]**
4	If one of roots of $2x^2 + ax + 32 = 0$ is twice the other root, then the value of a is _____. a) $8\sqrt{2}$ b) - $3\sqrt{2}$ c) - $2\sqrt{2}$	**[1]**

	d) $12\sqrt{2}$	
5	Which term of the A.P. - 29, - 26, - 23, ..., 61 is 16? a) 16^{th} b) 10^{th} c) 11^{th} d) 31^{st}	**[1]**
6	The distance of the point (5, 4) from the origin is a) $\sqrt{41}$ b) 9 c) 41 d) 3	**[1]**
7	If the points (2, 3), (4, k) and (6, - 3) are collinear, then the value of kis a) 0 b) 4 c) 1 d) 3	**[1]**
8	In the given figure, DE || BC. If AD = 2 units, DB = AE = 3 units and EC = x units, then the value of x is:  a) 2 b) 5 c) $\frac{9}{2}$ d) 3	**[1]**
9	In the given figure, quadrilateral ABCD is circumscribed, touching the circle at P, Q, R and S such that$\angle DAB = 90^o$, If CR = 23 cm and CB = 39 cm and the radius of the circle is 14 cm, then the measure of AB is	**[1]**

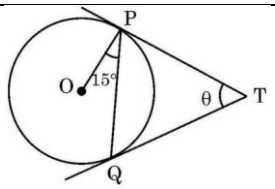
	 a) 39 cm b) 37 cm c) 16 cm d) 30 cm	
10	In two concentric circles, a tangent to the smaller circle will intersect the larger circle at: a) two points b) three points c) zero point d) one point	**[1]**
11	$\sqrt{\frac{1+\cos A}{1-\cos A}}$ =? a) cosec A cot A b) cosec A - cot A c) - cosec A cot A d) cosec A + cot A	**[1]**
12	If secθ - tan $\theta = \frac{1}{3}$, then the value of (sec θ + tan θ) is: a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) $\frac{4}{3}$ d) 3	**[1]**
13	An observer 1.5 m tall is 23.5 m away from a tower 25m high. The angle of elevation of the top of the tower from the eye of the observer is a) 30° b) 45°	**[1]**

	c) 15^o d) 60°	
14	The area of the sector of a circle of radius 10.5 cm is 69.3 cm^2 . Find the central angle of the sector. a) 85^o b) 70^o c) 72^o d) 26^o	**[1]**
15	If a sector of a circle has an area of40π sq. units and a central angle of 72° , the radius of the circle is: a) 100 units b) $10\sqrt{2}$ units c) 200 units d) 20 units	**[1]**
16	Which of the following cannot be the probability of an event? a) 0.7 b) 15% c) $\frac{2}{3}$ d) - 1.5	**[1]**
17	A die is thrown twice. The probability that 5 will come up at least once is a) 0 b) $\frac{25}{36}$ c) $\frac{11}{36}$ d) 1	**[1]**
18	Consider the following frequency distribution: Class | 0-5 | 6-11 | 12-17 | 18-23 | 24-29 Frequency | 13 | 10 | 15 | 8 | 11 The upper limit of the median class is a) 17.5	**[1]**

	b) 17 c) 18 d) 18.5	
19	**Assertion (A):** The given figure represents a hemisphere surmounted by a conical block of wood. The diameter of their bases is 6 cm each and the slant height of the cone is 5 cm. The volume of the solid is 196cm ^{3}  **Reason (R):** The volume hemisphere is given by $\frac{2}{3}\pi r^3$ a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
20	**Assertion (A):** Common difference of the A.P. 5, 1, - 3, - 7 ...is 4. **Reason (R):** Common difference of the A.P. a $_1$, a $_2$, a $_3$ ...an is obtained by d = a $_n$ - a $_{n-1}$. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
	Section B	
21	Define HCF of two positive integers and find the HCF of the pair of numbers: 18 and 24. **OR** Show that 5 +$\sqrt{7}$ is an irrational number, where $\sqrt{7}$ is given to be an irrational number.	**[2]**
22	In△ PQR, if S and T are two points on the sides PQ and PR respectively such that PS = 2.4 cm, SQ = 7.2 cm, PT = 1.8 cm and TR = 5.4 cm, then state whether ST||QR or not.	**[2]**
23	In figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are AB = 6 cm, BC = 9 cm and CD = 8 cm. Find the length of side AD.	**[2]**

		
24	Prove that: $\frac{\cos A-\sin A+1}{\cos A+\sin A-1}$ = cosec A + cot A **OR** If $\tan\theta + \cot\theta = 2$, find the value of $\tan^2\theta + \cot^2\theta$.	**[2]**
25	Find the area of the segment of a circle, if angle of the sector is 90° and the radius of the circle is 21 cm.	**[2]**
	Section C	
26	Mika exercises every 12 days and Nanu every 8 days. Mikaand Nanu both exercised today. How many days will it be until they exercise together again?	**[3]**
27	Obtain the zeroes of the polynomial $7x^2 + 18x - 9$. Hence, write a polynomial each of whose zeroes is twice the zeroes of given polynomial.	**[3]**
28	The percentage of marks obtained by 100 students in an examination are given below: Determine the median percentage of marks.	**[3]**
29	Solve the system of the equation: 99x + 101y = 499 101x + 99y = 501 **OR** Five years ago, Amit was thrice as old as Baljeet. Ten years hence, Amit shall be twice as old as Baljeet. What are their present ages?	**[3]**
30	Prove the following trigonometric identity: $\frac{\cos\theta}{1+\sin\theta}+\frac{1+\sin\theta}{\cos\theta} = 2\sec\theta$	**[3]**
31	In the adjoining figure, TP and TQ are tangents drawn to a circle with centre O. If $\angle OPQ = 15°$ and $\angle PTQ = \theta$, then find the value of $\sin 2\theta$.	**[3]**

Percentage of Marks	Number of Students
30 - 35	16
35 - 40	14
40 - 45	18
45 - 50	20
50 - 55	18
55 - 60	12
60 - 65	2



OR

A chord PQ of a circle is parallel to the tangent drawn at a point R of the circle. Prove that R bisects the arc PRQ.

Section D

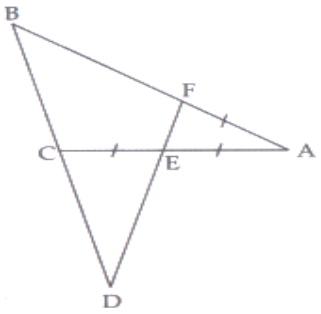
32 The population of lions was noted in different regions across the world in the following table: **[5]**

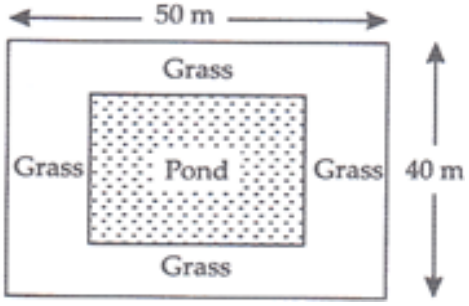
Number of lions	Number of regions
0-100	2
100-200	5
200-300	9
300-400	12
400-500	x
500-600	20
600-700	15
700-800	9
800-900	y
900-1000	2
	100

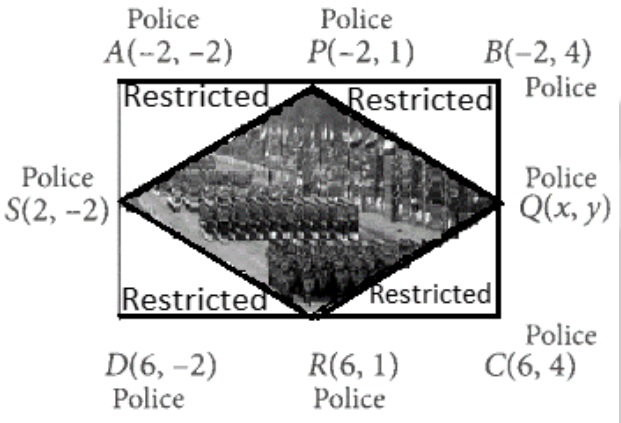
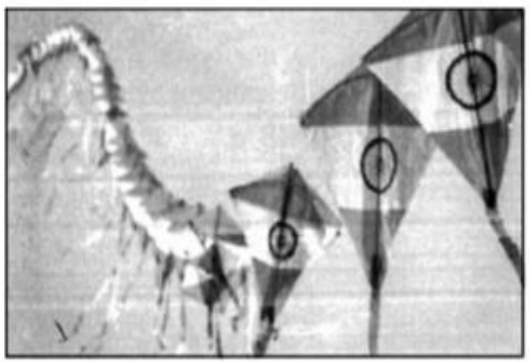
If the median of the given data is 525, find the values of$x$ and y.

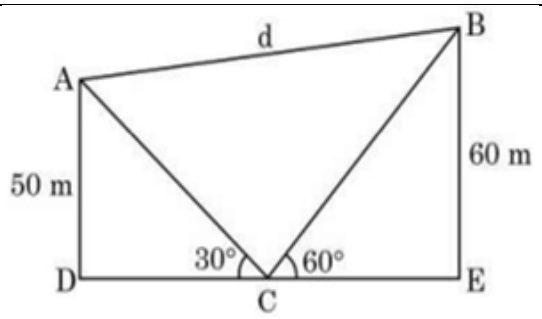
33 In the given figure, line segment DF intersect the side AC of a triangle△ ABC at the point E such that E is the mid–point of CA and ∠ AEF = ∠ AFE. Prove that: $\frac{BD}{CD} = \frac{BF}{CE}$. **[5]**

[Hint: Take point G on AB such that CG ∥ DF.]



34	In the centre of a rectangular lawn of dimensions 50 m × 40 m, a rectangular pond has to be constructed so that the area of the grass surrounding the pond would be 1184 m^2 . Find the length and breadth of the pond  **OR** The length of the sides forming right angle of a right triangle are 5x cm and (3x - 1)cm. If the area of the triangle is 60 cm^2 . Find its hypotenuse.	**[5]**
35	A spherical glass vessel has a cylindrical neck which is 7 cm long and 2 cm in diameter. The diameter of the spherical part is 14 cm. Find the capacity of the entire glass vessel. (Use$\pi = \frac{22}{7}$) **OR** A building is in the form of a cylinder surmounted by a hemispherical dome. The base diameter of the dome is equal to$\frac{2}{3}$ of the total height of the building. Find the height of the building, if it contains $67\frac{1}{21} m^3$ of air.	**[5]**
	Section E	
36	**Read the following text carefully and answer the questions that follow:** The students of a school decided to beautify the school on an annual day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2 metre. The flags are stored at the position of the middlemost flag. Ruchi was given the responsibility of placing the flags. Ruchi kept her books where the flags were stored. She could carry only one flag at a time.  1. How much distance did she cover in pacing 6 flags on either side of center point? (1) 2. Represent above information in Arithmetic progression. (1) 3. How much distance did she cover in completing this job and returning to collect her books? (2)	**[4]**

	OR What is the maximum distance she travelled carrying a flag? (2)	
37	**Read the following text carefully and answer the questions that follow:** In order to facilitate smooth passage of the parade, movement of traffic on certain roads leading to the route of the Parade and Tableaux ah rays restricted. To avoid traffic on the road Delhi Police decided to construct a rectangular route plan, as shown in the figure.  1. If Q is the mid point of BC, then what are the coordinates of Q? (1) 2. What is the length of the sides of quadrilateral PQRS? (2) 3. What is the length of route PQRS? (2) **OR** What is the length of route ABCD? (2)	**[4]**
38	**Kite Festival** Kite festival is celebrated in many countries at different times of the year. In India, every year 14^{th} January is celebrated as International Kite Day. On this day many people visit India and participate in the festival by flying various kinds of kites. The picture given below, shows three kites flying together. 	**[4]**



In Fig., the angles of elevation of two kites (Points A and B) from the hands of a man (Point C) are found to be 30 ^{o} and 60 ^{o} respectively. Taking AD = 50 m and BE = 60 m, find

1. the lengths of strings used (take them straight) for kites A and B as shown in the figure. (2)
2. the distance **d** between these two kites.(2)

ALL THE BEST