SAMPLE QUESTION PAPER
Class IX Session 2026-27
MATHEMATICS

TIME: 3 hours **MAX.MARKS: 80**

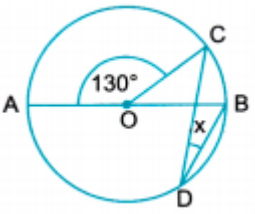
General Instructions:

Read the following instructions carefully and follow them:

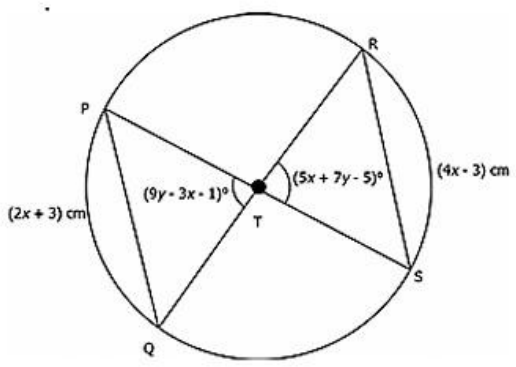
1. **This question paper contains 38 questions.**
2. **This Question Paper is divided into 5 Sections A, B,C,D and E.**
3. **In Section A, Questions no. 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.**
4. **In Section B, Questions 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 Qs of 5 marks, 2 Questions of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.**
9. **Draw neat and clean figures wherever required.**
10. **Take π =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 degree of the polynomial 8 is:** **(A) 0 (B) 1 (C) 2 (D) not defined**	**1**
2.	**The circumcentre of an obtuse angled triangle lies in/on** **(A) the interior of the triangle (B) the longest side of the triangle** **(C) the exterior of the triangle (D) the shortest side of the triangle**	**1**
3.	**What is the sum of the first 20 natural numbers ?** **(A) 190 (B) 200 (C) 210 (D) 220**	**1**
4.	**The value of the polynomial $z^4 - 2z^3 + 3$ at $z = -1$ is:** **(A) 2 (B) 3 (C) 5 (D) 6**	**1**
5.	**If for two numbers a and b, $(a+b)^2 < a^2 + b^2$, then:** **(A) $ab<0$ (B) $ab>0$ (C) $a=b$ (D) either $a=0$ or $b=0$**	**1**

6.	When a point P(a,b) is reflected in X-axis , its image P' has coordinates (A) (-a , b) (B) (a , -b) (C) (-a , -b) (D) (b , a)	1
7.	If M(3 , K) is the mid point of the line segment joining A(-1 , 4) and B(7 , 2) , then K equals (A) 6 (B) 3 (C) 2 (D) 1	1
8.	In the Sierpiński triangle, if the stage 0 is the uncut triangle the number of black triangles at Stage 3 is - (A) 27 (B) 81 (C) 64 (D) 243	1
9.	If the distance between the points (2 , -2) and (-1 , x) is 5 , one of the values of x is (A) -2 (B) 2 (C) -1 (D) 1	1
10.	Which of the following cannot be the probability of an event? (A) 1 (B) 0 (C) 0.75 (D) 1.3	1
11.	The rational number between $-\frac{1}{5}$ and $-\frac{2}{5}$ is (A) 0 (B) $-\frac{1}{4}$ (C) $-\frac{3}{10}$ (D) $-\frac{7}{25}$	1
12.	A circle has reflection symmetry across (A) one diameter (B) one angle (C) all the angles (D) any diameter	1
13.	The volume of a cube is given by the expression $27x^3 + 8y^3 + 54x^2y + 36xy^2$. The expression for the side of the cube is (A) 3y+2x (B) 2y-3x (C) - 2y+3x (D) 2y+3x	1
14.	What is the next term in the Virahānka–Fibonacci sequence 1, 2, 3, 5, 8, 13, ___ (A) 19 (B) 21 (C) 23 (D) 25	1
15.	The following table of values shows d (distance travelled in km) varying from 0 to 5 km and C (total cost in rupees). For how many kilometres will the cost of the journey be ₹700? **Distance travelled, *d* (km)** | 0 | 1 | 2 | 3 | 4 | 5 **Cost, *C* (₹)** | 100 | 160 | 220 | 280 | 340 | 400 (A) 8 km (B) 10 km (C) 11 km (D) 12 km	1
16.	According to Brahamgupta's idea of rina(debt)and dhana (fortune) , what is the result of multiplying two debts? (A) A debt (B) Zero (C) A fortune (D) Cannot be determined	1
17.	In a cyclic quadrilateral, if one angle measures 75°, then its opposite angle measures - (A) 15° (B) 75° (C) 105° (D) 275°	1

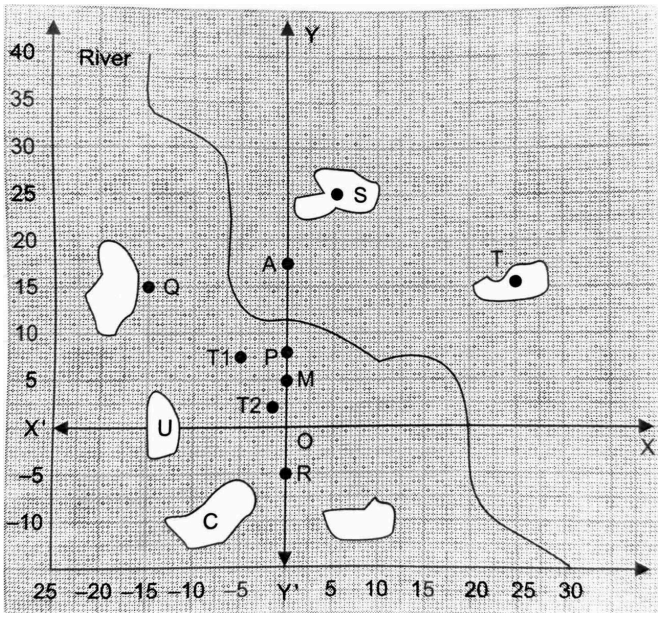
18.	**A die is thrown. What is the probability of getting an odd number less than 4?** **(A) 0 (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{1}{6}$**	**1**
	DIRECTION: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). **Choose the correct option** **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 explanat 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): The point (-6 , 0) lies on y-axis and (0 , -5) lies on x-axis.** **Reason (R) : Every point on the x-axis has ordinate = 0 and every point on the y-axis has abscissa = 0 .**	**1**
20.	**Assertion (A): The decimal representation of $\frac{21}{200}$ is terminating .** **Reason (R) : If the denominator of a rational number is of the form 2^m x 5^n where m and n are non negative integers then its decimal representation is terminating .**	**1**
	Section -B	
	Section B consists of 5 questions of 2 marks each.	
21.	**In the given figure O is the centre of the circle. Find x.**  	**2**
22.	**Raman sells printed t-shirts and plane t-shirts at his shop. He sells each printed t-shirt for ₹350 and each plane t-shirt for ₹230. On a day, he sells a total of 50 t-shirts for ₹14260. How many of each kind of t-shirt has he sold on that day?**	**2**
23.	**Represent the rational numbers $\frac{2}{3}$, $-\frac{5}{4}$ and $1\frac{1}{2}$ on a single number line.** **OR** **If $\frac{x}{5}+\frac{x}{7}=\frac{108}{315}$, find the rational number x.**	**2**
24.	**Using a suitable identity, find the square of 119.**	**2**

<table>
<tr><td>25.</td><td>If (a , b) is the mid point of the line segment joining the points A(10 , -6) and B(k ,4) and a - 2b = 18 , find the value of k.
OR
Do the points A(3 , 2) , B(-2 , -3) and C(2 , 3) form a triangle ? Justify. If so, name the type of triangle formed .</td><td>2</td></tr>
<tr><td></td><td>Section -C</td><td></td></tr>
<tr><td></td><td>Section C consists of 6 questions of 3 marks each</td><td></td></tr>
<tr><td>26.</td><td>Draw the graph of the equation y= 2x-5. Also, write the coordinates of the points where the line cuts the y-axis.
OR
A telecom company charges a fixed monthly fee and an additional cost per GB of the internet data used. A student observes that when she used 10 GB, her bill was ₹ 350. When she used 20 GB, her bill was ₹ 550. If the monthly bill y depends on the amount of data used, x (in GB), according to the relation y = ax + b, find the values of a and b.</td><td>3</td></tr>
<tr><td>27.</td><td>The sum of three numbers is 10 and their product is 25. The sum of their squares is 38. Find the sum of the cubes of these three numbers.</td><td>3</td></tr>
<tr><td>28.</td><td>Which term of the GP : 2, 6, 8, …. is 4374. Write the explicit formula as well as the recursive formula for the n^{th} term.</td><td>3</td></tr>
<tr><td>29.</td><td>Two parallel chords of length 6cm and 8cm are on opposite sides of the centre of a circle. If the radius of the circle is 5cm, find the distance between the midpoints of the chords.</td><td>3</td></tr>
<tr><td>30.</td><td>In a school out of 190 students of class IX there are 105 boys. The school provides facilities for after-school activities to class IX students. The table given below shows the number of students who take part in after-school activities.
<table><tr><th>Activity</th><th>Number of girls participating</th><th>Number of boys participating</th></tr><tr><td>Sports (any)</td><td>16</td><td>30</td></tr><tr><td>Classical dance</td><td>13</td><td>5</td></tr><tr><td>Aerobics</td><td>15</td><td>17</td></tr><tr><td>Musical Instruments</td><td>17</td><td>20</td></tr><tr><td>Arts and crafts</td><td>20</td><td>10</td></tr></table>i) Of all the boys participating in classical dance, one is randomly chosen for an annual day performance. What is the probability of a boy being chosen?
ii) Of all the students who have not participated in any after-school activities, one student is randomly chosen to coordinate the annual day function. What is the probability of a girl being chosen?
OR
A basket contains 4 red balls and 5 blue balls. One ball is drawn and laid aside, and then a second ball is drawn. Draw a tree diagram to represent the possible outcomes and probabilities. Use the tree diagram to answer the following questions.</td><td>3</td></tr>
</table>

	(i) What is the probability of drawing a red ball and then a blue ball? **(ii) What is the probability of drawing 2 blue balls?**	
31.	**Prove that $\sqrt{5}$ is an irrational number .**	**3**
	Section -D	
	Section D consists of 4 questions of 5 marks each	
32.	**Simplify the following rational expression assuming that $5x^2 + 5x - 100 \neq 0$:** $\frac{(x^2 - 7x + 12)(x^2 - 25)}{5x^2 + 5x - 100}$ **OR** **Jiya is creating a two-digit security code for her locker. She remembers that the sum of the digits of the code is 11, and the product of the digits is 24. She wants to figure out the exact number to set her code correctly. Find the values of the digits and hence, determine the possible two-digit security code formed by these digits.**	**5**
33.	**Determine the AP whose third term is 16 and whose seventh term exceeds the fifth term by 12.**	**5**
34.	**If AB and DE are two chords of a circle with centre C and AB > DE, then prove that the distance from C to AB is less than the distance from C to DE.** **OR** **Prove that equal chords subtend equal angles at the centre of the circle.**  **In the given figure, PQ and RS are equal chords of a circle with centre T of length (2x + 3)cm and (4x - 3) cm respectively. What is the measure of $\angle$PTQ?**	**5**
35.	**Express $0.6 + 0.\overline{7} + 0.4\overline{7}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.**	**5**
	Section E	
	Section E consists of 3 case study based questions of 4 marks each.	
36.	**Saving in a piggy bank is a great way to build healthy financial habits. You may start by setting a clear savings goal, committing to a fixed daily or weekly deposit schedule, and using modern tracking tools to keep yourself motivated on your journey. Riya's piggy**	

	bank contains ₹500 initially. Every week, she adds ₹150 to the piggy bank. **Taking the money saved to be ₹ M and time be t weeks, answer the following questions:** **(i) How much money will be in the piggy bank after 3 weeks?** **(ii) Find an expression that relates M and t and explain whether it represents linear growth or linear decay.** **(iii)(a) Make a table of values for t varying from 0 to 6 weeks and show how the money saved, M, changes every week.** **OR** **(iii)(b) A friend says, "If Riya has ₹3,200 in her piggy bank, she must have been saving for 20 weeks." Do you agree with the friend? Justify your answer**	
37.	**During a science fair, a student Arjun set up an experiment where participants rolled a fair six-sided die 120 times. The outcomes were recorded as follows: 1 appeared 18 times, 2 appeared 22 times, 3 appeared 19 times, 4 appeared 21 times, 5 appeared 20 times, and 6 appeared 20 times. Arjun compared the experimental results with the theoretical probability.**  | Outcome	1	2	3	4	5	6	Total
---	---	---	---	---	---	---	---
Frequency	18	22	19	21	20	20	120
Exp. Prob.	18/120	22/120	19/120	21/120	20/120	20/120	— | **(i) Write the sample space S for rolling a die once. Find the theoretical probability of getting an even number.** **(ii) Find the experimental probability of getting the number 3 in Arjun's experiment. Compare it with the theoretical probability of getting 3.** **(iii)(a) Find the experimental probability of getting a number greater than 4 in Arjun's experiment. Find the theoretical probability of the same event. Comment on how close they are, referring to the Law of Large Numbers.** **OR** **(iii)(b) After 120 rolls, Arjun gets 6 six times in a row at the end. His friend says "6 is now less likely on the next roll." Is his friend correct? Name the fallacy and state the actual probability of getting 6 on the next roll.**	
38.	**National Park : A national park is an area set aside by the government to preserve and protect natural environment .**	

The graph below shows a map of the National Park .The shaded areas indicate woods. The plane areas indicate meadows and fields without trees . Point O on the graph represents the location of the park's supervisor's office , and points P and Q are the ranger's towers.



Based on the above information , answer the following questions

(i) Find the distance between the towers P(0 , 7.5) and Q(-15 , 15).

(ii) Find the distance of the point S(5 , 25) from X-axis.

(iii) (a) Write the coordinates of the points M , O and R and check whether the points are collinear using distance formula.

OR

(iii) (b) There are two trees T_1(-5 , 7) and T_2(-1 , 3)in the park . Find the coordinates of the mid point of the line segment joining both the trees .