



TECHNO INDIA GROUP PUBLIC SCHOOL

Mock Paper-1 Mathematics Class—X (2025–26)

Time Allowed: **3 hours**

Maximum Marks: **80**

General Instructions:

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All questions are compulsory.
2. This question paper is divided into 5 sections A, B, C, D and E.
3. In Section A, Question numbers 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, Question numbers 21–25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26–31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32–35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 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. There is no overall choice. 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 question of Section E.
9. Draw neat and clean figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.
10. Use of calculators is not allowed.

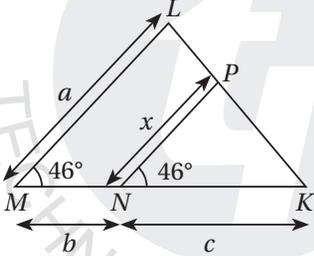
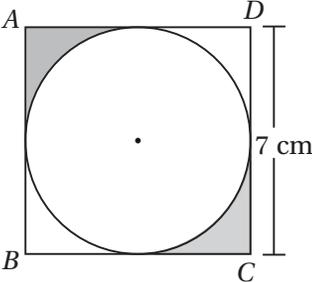
SECTION A**Section A: consists of 20 questions of 1 mark each.**

1.	What is the largest number that divides 70 and 125, leaving remainders 5 and 8 respectively? (A) 13 (B) 9 (C) 3 (D) 585	[1]
2.	If $P(1,2)$, $Q(4,6)$, $R(5,7)$, and $S(a,b)$ are the vertices of a parallelogram $PQRS$, then (A) $a = 2, b = 4$ (B) $a = 3, b = 4$ (C) $a = 2, b = 3$ (D) $a = 1, b = -1$	[1]
3.	If $3x - 5y = 1$, $\frac{2x}{x-y} = 4$, then the value of $x + y$ is (A) $\frac{1}{3}$ (B) -3 (C) 3 (D) $\frac{1}{13}$	[1]
4.	If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80° , then $\angle POA$ is equal to (A) 50° (B) 60° (C) 70° (D) 80°	[1]
5.	The maximum value of $\frac{1}{\operatorname{cosec}\theta}$ ($90^\circ \geq \theta \geq 0^\circ$) is (A) 0 (B) $\frac{1}{2}$ (C) $\frac{\sqrt{3}}{2}$ (D) 1	[1]
6.	If the roots of the equation $(b-c)x^2 + (c-a)x + (a-b) = 0$ are equal, then (A) $2b = a + c$ (B) $2a = b + c$ (C) $2c = a + b$ (D) $2b = a - c$	[1]
7.	If the difference between the area of a regular hexagon and the area of a circle circumscribed it is 26.705 cm^2 . Find the radius of the circle. (Use $\pi = 3.143$, $\sqrt{3} = 1.732$) (A) 14 cm (B) 7 cm (C) 6 cm (D) 12 cm	[1]
8.	If three coins are tossed simultaneously, then the probability of getting at least two heads, is (A) $\frac{1}{4}$ (B) $\frac{3}{8}$ (C) $\frac{1}{2}$ (D) $\frac{1}{8}$	[1]
9.	In ΔPQR , right-angled at Q , $PR + QR = 25 \text{ cm}$ and $PQ = 5 \text{ cm}$. The value of $\sin P$ is (A) $\frac{12}{13}$ (B) $\frac{5}{13}$ (C) $\frac{2}{13}$ (D) $\frac{3}{13}$	[1]
10.	If $\text{HCF}(a, b) = 12$ and $a \times b = 10800$, then $\text{LCM}(a, b)$ is (A) 3600 (B) 900 (C) 150 (D) 90	[1]
11.	The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of ₹ 210 per 100 m^2 . (A) ₹ 1150 (B) ₹ 1155 (C) ₹ 1055 (D) ₹ 1255	[1]
12.	If a, b are the zeros of $f(x) = x^2 + px + 1$ and c, d are the zeros of $f(x) = x^2 + qx + 1$, then the value of $E = (a-c)(b-c)(a+d)(b+d)$ is (A) $p^2 - q^2$ (B) $q^2 - p^2$ (C) $q^2 + p^2$ (D) None of these	[1]

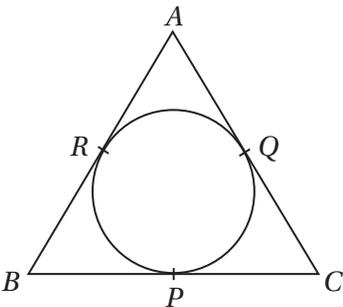
19.	Assertion (A): The H.C.F. of two numbers is 16 and their product is 3072. Then their L.C.M. = 162. Reason (R): If a and b are two positive integers, then H.C.F. \times L.C.M. = $a \times b$. (A) (a) (B) (b) (C) (c) (D) (d)	[1]
20.	Assertion (A): $\left(\frac{1+\cos\theta}{\sin\theta}\right)^2 = \frac{1+\cos\theta}{1-\cos\theta}$ Reason (R): $\sin^2\theta = \cos^2\theta - 1$ (A) (a) (B) (b) (C) (c) (D) (d)	[1]

SECTION B

Section B consists of 5 questions of 2 marks each

21.	(A) If the sum of n terms of an AP is $2n^2 + 5n$, then find its n -th term. OR (B) If the 15 th term of an A.P. is 121 and 25 th term is 201, then find the 35 th term of the A.P.	[2] [2]
22.	If $\frac{\cos\theta - \sin\theta}{\cos\theta + \sin\theta} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$, then find the acute angle θ .	[2]
23.	In figure, $\angle M = \angle N = 46^\circ$. Express x in terms of a , b and c where a , b and c are lengths of LM , MN and NK respectively. 	[2]
24.	(A) In the figure given below, $ABCD$ is a square with each side measuring 7 cm and a circle is inscribed in the square.  What is the total area of the shaded region? OR (B) In the given parallelogram $PQRS$, if the area of the shaded part of the circle with centre S and radius 14 cm is 462 cm^2 , then find angle QRS . (Take $\pi = \frac{22}{7}$) 	[2] [2]

25.	<p>The incircle of triangle ABC touches the sides BC, CA and AB at P, Q and R respectively. Then prove that $(AR + BP + CQ) = (AQ + BR + CP) = \frac{1}{2}$ (perimeter of $\triangle ABC$).</p>	[2]
-----	--	-----



SECTION C

Section C consists of 6 questions of 3 marks each

26.	<p>Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre of the circle.</p>	[3]
27.	<p>Prove that $\sqrt{3} + \sqrt{5}$ is an irrational number.</p>	[3]
28.	<p>If c, d are zeros of $x^2 - 10ax - 11b$ and a, b are zeros of $x^2 - 10cx - 11d$, then find the value of $a + b + c + d$.</p>	[3]
29.	<p>(A) Prove that $\frac{\cot A + \operatorname{cosec} A - 1}{\cot A - \operatorname{cosec} A + 1} = \frac{1 + \cos A}{\sin A}$</p> <p style="text-align: center;">OR</p> <p>(B) If $\sin \theta + \sin^2 \theta + \sin^3 \theta = 1$, then find the value of $\cos^6 \theta - 4\cos^4 \theta + 8\cos^2 \theta$.</p>	[3]
30.	<p>On a particular day, Vinod and Unnati couldn't decide on who would get to drive the car. They had two dice for each and flipped their dice exactly one time. The following was agreed upon:</p> <ol style="list-style-type: none"> 1. If Vinod gets two faces same, he would drive the car. 2. If Unnati gets an even face and an odd face, she would drive the car. <p>Who has greater probability to drive the car that day? Justify your answer.</p>	[3]
31.	<p>(A) One kg of tea and 4 kg of sugar together cost ₹ 220. If the price of sugar increases by 50% and the price of tea increases by 10%, the cost would be ₹ 266. Find the original cost per kg of each.</p> <p>(B) Solve for x and y: $x + \frac{6}{y} = 6$, $3x - \frac{8}{y} = 5$</p>	[3]

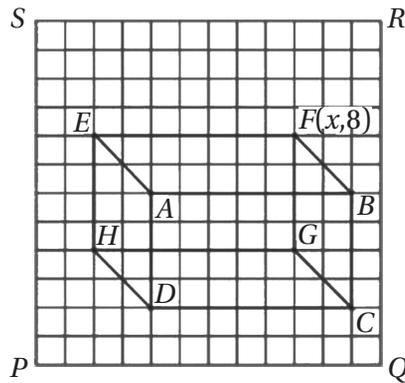
SECTION D

Section D consists of 4 questions of 5 marks each

32.	<p>The diagonal of a rectangular field is 60 metres more than the shorter side. If the longer side is 30 metres more than the shorter side, find the sides of the field.</p>	[5]
-----	--	-----

33.	<p>If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.</p> <p>In triangle ABC, $DE \parallel BC$. Find the length of side AD, given that $AE = 1.8$ cm, $BD = 7.2$ cm and $CE = 5.4$ cm.</p>	[5]																																		
34.	<p>(A) The height of a cone is 40 cm. A small cone is cut off at the top by a plane parallel to the bases. If the volume of the small cone be $\frac{1}{64}$ of the volume of the given cone, at what height above the base is the section made?</p> <p style="text-align: center;">OR</p> <p>(B) A solid right circular metallic cone of height 5 cm and radius 21 cm is melted to form some coins of diameter 2 cm and width 6 mm and some spherical balls of diameter 3 cm. If the ratio of the number of coins to the number of balls is 2:3, then find the number of coins and balls.</p>	[5]																																		
35.	<p>(A) The mode of the following series is 36. Find the missing frequency f in it.</p> <table border="1" data-bbox="212 690 1028 776"> <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> <td>50-60</td> <td>60-70</td> </tr> <tr> <td>Frequency</td> <td>8</td> <td>10</td> <td>f</td> <td>16</td> <td>12</td> <td>6</td> <td>7</td> </tr> </tbody> </table> <p>Also, find the median of the above data.</p> <p style="text-align: center;">OR</p> <p>(B) Determine mean and mode of the following distribution.</p> <table border="1" data-bbox="212 895 1182 981"> <tbody> <tr> <td>Marks</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> <td>50-60</td> <td>60-70</td> <td>70-80</td> </tr> <tr> <td>No. of Students</td> <td>4</td> <td>5</td> <td>10</td> <td>20</td> <td>15</td> <td>8</td> <td>10</td> <td>18</td> </tr> </tbody> </table>	Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Frequency	8	10	f	16	12	6	7	Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	No. of Students	4	5	10	20	15	8	10	18	[5]
Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70																													
Frequency	8	10	f	16	12	6	7																													
Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80																												
No. of Students	4	5	10	20	15	8	10	18																												
<p>SECTION E</p> <p>Section E consists of 3 case study-based questions of 4 marks each</p>																																				
36.	<p>While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forms an AP. If the number on the nth spot is $20 + 4n$, then answer the following questions to help the player in spotting the clues.</p> <div style="text-align: center;">  </div> <p>I. Which number is on the first spot?</p> <p>II. Find the common difference of the given AP.</p> <p>III. (A) What is the sum of all the numbers on the first 10 spots?</p> <p style="text-align: center;">OR</p> <p>(B) Which spot is numbered as 116?</p>	<p>[1]</p> <p>[1]</p> <p>[2]</p> <p>[2]</p>																																		

37. According to medical science and research, keeping an aquarium in the house helps in treating stress, anxiety and health problems associated with blood. It also provides visual stimulation that boost your focus and creativity. A sketch of an aquarium is drawn, which is given in the following figure.



- I. Find the coordinates of H.
- II. Find the distance of the point G from the Y-axis.
- III. (A) Find the length of diagonal FD and the value of x .

[1]
[1]
[2]

OR

(B) If Q is considered as origin, then find the coordinates of mid-point of BC .

[2]

38. There is fire incident in the house. The house door is locked so, the fireman is trying to enter the house from the window. He places the ladder against the wall such that its top reaches the window as shown in the figure.



Based on the above information, answer the following questions :

- I. If window is 6 m above the ground and angle made by the foot of ladder to the ground is 30° , then find the length of the ladder.
- II. If fireman places the ladder 5 m away from the wall and angle of elevation is observed to be 30° , then find the length of the ladder.
- III. (A) If fireman places the ladder 2.5 m away from the wall and angle of elevation is observed to be 60° , then find the height of the window. (Take $\sqrt{3} = 1.73$).

[1]
[1]
[2]

OR

(B) If the fireman gets a 9 m long ladder and window is at 6 m height, then how far should the ladder be placed?

[2]