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INDIAN SCHOOL SALALAH
FIRST TERM EXAMINATION – SEPTEMBER 2025



Class: X

MATHEMATICS (041)

Date: 22/09/2025

Time: 3 hours

Maximum Marks: 80

General Instructions:

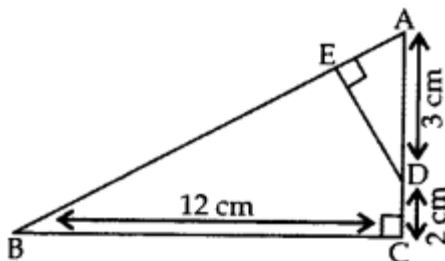
- This Question Paper has 5 Sections A, B, C, D and E.
- Section A has 20 MCQs carrying 1 mark each
- Section B has 5 questions carrying 02 marks each.
- Section C has 6 questions carrying 03 marks each.
- Section D has 4 questions carrying 05 marks each.
- Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
- All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E
- Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

	SECTION A	MARKS
1	The largest number that divides 70 and 125, which leaves the remainders 5 and 8, is: a) 65 b) 15 c) 13 d) 25	1
2	LCM of the given number 'x' and 'y' where y is a multiple of 'x' is given by a) x b) y c) xy d) $\frac{x}{y}$	1
3	If the zeroes of the quadratic polynomial $ax^2 + bx + c, c \neq 0$ are equal, then a) c and b have opposite signs b) c and a have opposite signs c) c and b have same signs d) c and a have same signs	1
4	If one zero of the quadratic polynomials $x^2 + 3x + k$ is 2, then the value of k is a) 10 b) -10 c) 5 d) -5	1

5	Which out of the following type of straight lines will be represented by the system of equations $3x + 4y = 5$ and $6x + 8y = 7$ a) Parallel b) Intersecting c) Coincident d) perpendicular to each other	1
6	If $x = 1$ and $y = 2$ is a solution of the pair of linear equations $2x - 3y + a = 0$ and $2x + 3y - b = 0$, then a) $a = 2b$ b) $2a = b$ c) $a + 2b = 0$ d) $2a + b = 0$	1
7	If the pair of equations $3x - y + 8 = 0$ and $6x - ry + 16 = 0$ represent coincident lines, then the value of r is a) $-\frac{1}{2}$ b) $\frac{1}{2}$ c) -2 d) 2	1
8	The roots of the quadratic equation $3x^2 - 6x + 3 = 0$ are a) Real and distinct b) Not real c) Real and equal d) None of these	1
9	The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, the other two sides of the triangle are equal to: a) Base = 10cm and Altitude = 5cm b) Base = 12cm and Altitude = 5cm c) Base = 14cm and Altitude = 10cm d) Base = 12cm and Altitude = 10cm	1
10	The sum of all two-digit odd numbers is a) 2575 b) 2475 c) 2524 d) 2425	1
11	Three numbers in A.P have the sum 30. What is its middle term? a) 4 b) 10 c) 16 d) 8	1
12	If p, q, r and s are in A.P. then $r - q$ is a) $s - p$ b) $s - q$ c) $s - r$ d) none of these	1
13	The distance of the point $(-1, 7)$ from the x -axis is a) -1 b) 7 c) 6 d) $\sqrt{50}$	1
14	The points $(-4, 0)$, $(4, 0)$ and $(0, 3)$ are the vertices of a a) right triangle b) isosceles triangle c) equilateral triangle d) scalene triangle	1

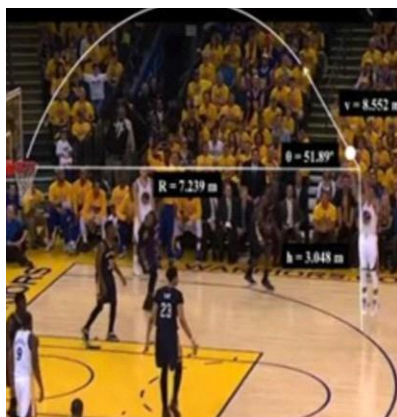
15	In $\triangle ABC$, $AB = 6$ cm and $DE \parallel BC$ such that $AE = \frac{1}{4}AC$ then the length of AD is a) 2 cm b) 1.2 cm c) 1.5 cm d) 4 cm	1
16	$\triangle ABC \sim \triangle DEF$. If $AB = 4$ cm, $BC = 3.5$ cm, $CA = 2.5$ cm and $DF = 7.5$ cm, then the perimeter of $\triangle DEF$ is a) 10 cm b) 14 cm c) 30 cm d) 25 cm	1
17	If the arithmetic mean of x , $x + 3$, $x + 6$, $x + 9$ and $x + 12$ is 10, then $x = ?$ a) 1 b) 2 c) 6 d) 4	1
18	If a coin is tossed 3 times, what is the probability of getting 2 heads and 1 tail? a) $\frac{1}{8}$ b) $\frac{3}{8}$ c) $\frac{1}{2}$ d) $\frac{5}{8}$	1
	In question numbers 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.	
19	Assertion: If a box contains 5 white, 2 red and 4 black marbles, then the probability of not drawing a white marble from the box is $\frac{5}{11}$. Reason: $P(\bar{E}) = 1 - P(E)$, where E is any event. 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.	1
20	Assertion: If the value of mode and mean is 60 and 66 respectively, then the value of median is 64. Reason: Median = (mode + 2 mean)/2 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.	1

	SECTION B	
21	Prithvi has 40 cm long red ribbon and 84 cm long blue ribbon. He cuts each ribbon into piece such that all pieces are of equal length. What is the length of each piece? Also find the number of pieces. OR The LCM of two numbers is 9 times their HCF. The sum of LCM and HCF is 500. Find the HCF of two numbers.	2
22	If α and β are the zeroes of a quadratic polynomial $x^2 - x - 2$ then find the value of $\frac{1}{\alpha} - \frac{1}{\beta}$.	2
23	Solve for x: $\sqrt{3} x^2 - 2\sqrt{2} x - 2\sqrt{3} = 0$	2
24	Find the ratio in which y-axis divides the line segment joining the points A(5, -6) and B(-1, -4). OR A line intersects the y-axis and x-axis at the points P and Q respectively. If (2, -5) is the midpoint of PQ; then find the coordinates of P and Q.	2
25	Two dice are thrown at the same time. Find the probability of getting a) Same number on both dice. b) The sum of two numbers appearing on both dice is 8.	2
	SECTION C	
26	Given $\sqrt{3}$ is irrational, prove that $5 + 2\sqrt{3}$ is irrational.	3
27	A fraction becomes $\frac{9}{11}$, if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator, it becomes $\frac{5}{6}$. Represent the above situation algebraically and hence find the fraction. OR Solve the following pair of linear equations for x and y: $141x + 93y = 189$; $93x + 141y = 45$	3
28	How many terms of the AP: 24, 21, 18, . . . must be taken so that their sum is 78? OR	3

	If the sum of the first n terms of an AP is $4n - n^2$, what is the sum of the first two terms. Also find the second term and nth term.																	
29	Prove that "If a line is drawn parallel to one side of a triangle and intersects the other two sides, then it divides those two sides in the same ratio."	3																
30	Compute the mode for the following distribution. <table border="1"><tr><td>Class</td><td>0-4</td><td>4- 8</td><td>8 -12</td><td>12 -16</td><td>16 -20</td><td>20 - 24</td><td>24 - 28</td></tr><tr><td>Frequency</td><td>5</td><td>7</td><td>9</td><td>17</td><td>12</td><td>10</td><td>6</td></tr></table>	Class	0-4	4- 8	8 -12	12 -16	16 -20	20 - 24	24 - 28	Frequency	5	7	9	17	12	10	6	3
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Frequency	5	7	9	17	12	10	6											
31	One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting a) a king of red colour b) a face card. c) the queen of diamond.	3																
	SECTION D																	
32	Draw the graph of $2y = 4x - 6$; $2x = y + 3$ and determine whether this system of linear equations has a unique solution or not.	5																
33	A two-digit number is such that the product of its digits is 12. When 36 is added to this number, the digits interchange their places. Find the number. OR A train covers a distance of 200 km at constant speed. If the speed of the train is increased by 10 km/hr, the journey would have taken 1 hour less. Find the original speed of the train.	5																
34	In the given figure, $\triangle ABC$ is right-angled at C and $DE \perp AB$. Prove that $\triangle ABC \sim \triangle ADE$ and hence find the lengths of AE and DE.  OR 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.	5																

35	Find the values of x and y if the median of the following data is 32.	5																
	<table><tr><td>Classes</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>Total</td></tr><tr><td>Frequency</td><td>10</td><td>x</td><td>25</td><td>30</td><td>y</td><td>10</td><td>100</td></tr></table>	Classes	0-10	10-20	20-30	30-40	40-50	50-60	Total	Frequency	10	x	25	30	y	10	100	
Classes	0-10	10-20	20-30	30-40	40-50	50-60	Total											
Frequency	10	x	25	30	y	10	100											
	SECTION E																	
36	Case study 1: The school auditorium was to be constructed to accommodate at least 1500 people. The chairs are to be placed in concentric circular arrangement in such a way that each succeeding row has 10 seats more than the previous one.  Based on above information answer the following questions. a) If the first circular row has 30 seats, how many seats will be there in the 10th row? 1 b) If there were 17 rows in the auditorium, how many seats will be there in the middle row? 1 c) For 1500 seats in the auditorium, how many rows need to be there? 2 OR c) If 15000 seats are to be arranged in the auditorium, how many seats are still left to be put after the 10th row?																	
37	Case Study 2: Basketball and soccer are played with a spherical ball. Even though an athlete dribbles the ball in both sports, a basketball player uses his hands and a soccer player uses his feet. Usually, soccer is played outdoors on a large field and basketball is played indoors on a court made out of wood. The projectile (path																	

traced) of soccer ball and basketball are in the form of parabola, which can be represented using a quadratic polynomial.



Based on above information answer the following questions.

- Write the general form of a quadratic polynomial.
- If the path of a soccer ball is represented by $x^2 - 5x + 6$, find its zeroes.
- The path of a basketball is represented by $x^2 - 7x + 12$. Verify the relationship between the zeroes and the coefficients of this quadratic polynomial.

1
1
2

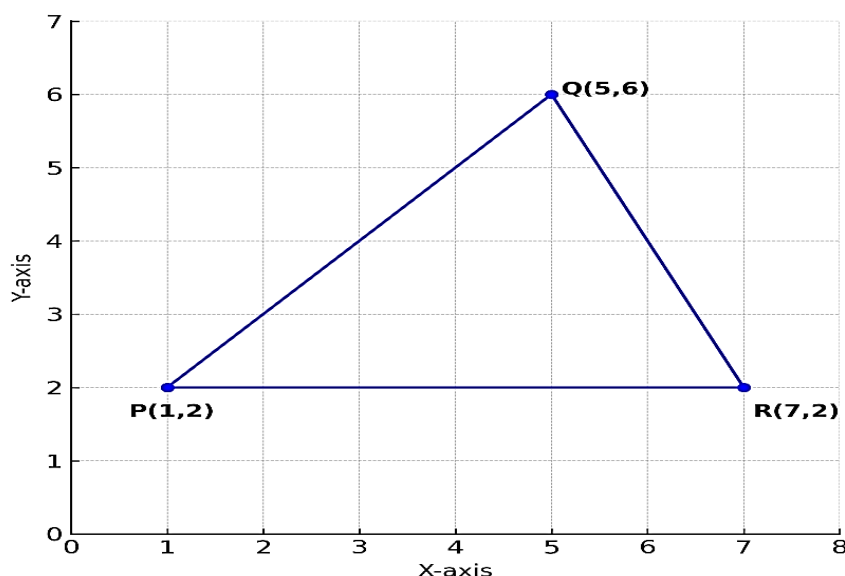
OR

- If a ball follows the path $x^2 + 4x + 3$, find the zeroes and hence find their sum and product.

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Case study 3:

The boundary of a triangular portion of a school playground is represented on the coordinate plane with vertices at P(1, 2), Q(5, 6), and R(7, 2). The school plans to place lights and benches at certain positions.



	Based on above information answer the following questions.	
	a) Find the distance between points P(1, 2) and Q(5, 6).	1
	b) Find the coordinates of the midpoint of side QR.	1
	c) Find the coordinates of the point which divides the line segment PR in the ratio 1:3.	2
	OR	
	c) If a vertical pole is to be erected at the midpoint of PR, what will be the coordinates of its base? Also, explain why the midpoint is the most suitable location for balance in this case.	
