



INDIAN SCHOOL AL WADI AL KABIR

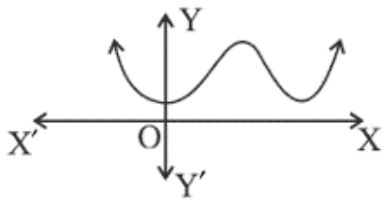
Mid Term Exam Practice Questions (2026-27)

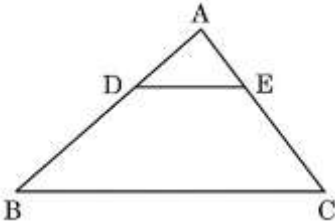
Class: X

Sub: MATHEMATICS (041)

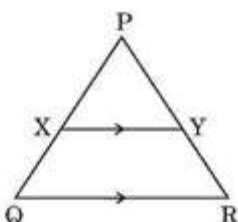
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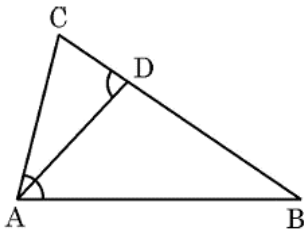
Section A (1 mark each)

Q.1.	For any natural number n , 6^n ends with the digit							
	A	0	B	6	C	3	D	2
Q.2.	The graph of $y = f(x)$ is given. The number of zeroes of $f(x)$ is							
								
	A	0	B	1	C	2	D	4
Q.3.	If the mean and mode of a data are 12 and 21 respectively, then its median is							
	A	6	B	13.5	C	15	D	14
Q.4.	The probability for a randomly selected number out of 1, 2, 3, 4, ..., 25 to be a composite number is							
	A	$\frac{15}{25}$	B	$\frac{10}{25}$	C	$\frac{11}{25}$	D	$\frac{9}{25}$
Q.5.	The coordinates of the point which divides the line segment joining the points (4, -3) and (8,5) in the ratio 3:1 internally is							
	A	(-3, -7)	B	(-7, -3)	C	(3, 7)	D	(7, 3)
Q.6.	In triangles PQR and MST, $\angle P = 55^\circ$, $\angle Q = 25^\circ$, $\angle M = 100^\circ$ and $\angle S = 25^\circ$, then							
	A	$\Delta TSM \sim \Delta PQR$	B	$\Delta TSM \sim \Delta QPR$	C	$\Delta MST \sim \Delta QRP$	D	$\Delta TMS \sim \Delta RQP$

Q.7.	For which value (s) of p, will the lines represented by the following pair of linear equations be parallel. $3x - y - 5 = 0$; $6x - 2y - p = 0$						
	A	all real values except 10	B	10	C	$\frac{5}{2}$	D $\frac{1}{2}$
Q.8.	All queens, jacks and aces are removed from a pack of 52 playing cards. The remaining cards are well-shuffled and one card is picked up at random from it. The probability of that card to be a king is						
	A	$\frac{1}{10}$	B	$\frac{1}{13}$	C	$\frac{3}{10}$	D $\frac{3}{13}$
Q.9.	For the data 2, 9, x + 6, 2x + 3, 5, 10, 5; if the mean is 7, then the value of x is						
	A	9	B	6	C	5	D 3
Q.10.	In the given figure, in ΔABC , $DE \parallel BC$. If $AD = 2.4$ cm, $DB = 4$ cm and $AE = 2$ cm, then the length of AC is 						
	A	$\frac{10}{3}$ cm	B	$\frac{3}{10}$ cm	C	$\frac{16}{3}$ cm	D 1.2 cm
Q.11.	If α and β are the zeroes of a polynomial $p(x) = x^2 + x - 1$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ equals						
	A	1	B	2	C	-1	D $-\frac{1}{2}$
Q.12.	If $3x + 4y : x + 2y = 9 : 4$, then $3x + 5y : 3x - y$ is						
	A	3: 4	B	7: 1	C	4: 7	D 1: 3
Q.13.	The pair of equations $5x - 15y = 8$ and $3x - 9y = \frac{24}{5}$ has						
	A	one solution	B	two solutions	C	infinite solutions	D no solution

Q.14.	If in two triangles DEF and PQR, $\angle D = \angle Q$ and $\angle R = \angle E$, then which of the following is not true?																			
	A	$\frac{EF}{PR} = \frac{DF}{PQ}$	B	$\frac{DE}{PQ} = \frac{EF}{RP}$	C	$\frac{DE}{QR} = \frac{DF}{PQ}$	D	$\frac{EF}{RP} = \frac{DE}{QR}$												
Q.15.	The distance of the point P (2, -2) from the origin is																			
	A	2	B	-2	C	0	D	$2\sqrt{2}$												
Q.16.	If the probability of a player winning a game is 0.21, then the probability of him losing the same game is																			
	A	1.79	B	0.81	C	0.79%	D	0.79												
Q.17.	If HCF (336, 54) = 6, then LCM (336, 54) is																			
	A	2520	B	3024	C	324	D	2196												
Q.18.	The discriminant of the quadratic equation $(x + 5)^2 = 2(5x - 3)$ is																			
	A	5	B	124	C	-5	D	-124												
Q.19.	The roots of the quadratic equation $(x - 1)^2 = 16$ are																			
	A	5, 3	B	4, -4	C	5, -3	D	-5, 3												
Q.20.	The equation of another line parallel to the line represented by $2x - 6y = 7$ is																			
	A	$y = 3x - 7$	B	$2x = 9 - 6y$	C	$x - 3y = 7$	D	$x = \frac{7}{2} - 3y$												
Q.21.	The upper limit of the median class for the given frequency distribution is																			
	<table><tr><td>Class</td><td>0 - 5</td><td>5 - 10</td><td>10 - 15</td><td>15 - 20</td><td>20 - 25</td></tr><tr><td>Frequency</td><td>8</td><td>10</td><td>19</td><td>25</td><td>8</td></tr></table>						Class	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	Frequency	8	10	19	25	8		
	Class	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25														
Frequency	8	10	19	25	8															
A	5	B	10	C	15	D	20													
Q.22.	The ratio in which the line $3x + y - 9 = 0$ divides the line joining the points (1, 3) and (2, 7) internally is																			
	A	3: 4	B	3: 2	C	2: 3	D	4: 3												

	DIRECTION: In the following question, 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.
Q.23.	Assertion(A): The polynomial $p(x) = x^2 + 3x + 3$ has two real zeroes. Reason(R): A quadratic polynomial can have at most two real zeroes.
Q.24.	Assertion(A): $P(E) + P(\bar{E}) = 1$ Reason(R): Probability of any event cannot be more than 0.
Q.25.	Assertion(A): The pair of linear equations $y = x$ and $y = 2x$ has infinitely many solutions. Reason(R): A pair of linear equations represented by coincident lines has infinitely many solutions.
Section B (2 marks each)	
Q.26.	In the given figure, $XY \parallel QR$, $\frac{PQ}{XQ} = \frac{7}{3}$ and $PR = 6.3$ cm. Find the length of YR. 
Q.27.	A box contains 12 balls of which some are red in colour. If 6 more red balls are put in the box and a ball is drawn at random, the probability of drawing a red ball becomes double than what it was before. Find the number of red balls in the bag.
Q.28.	Find the value(s) of k for which the quadratic equation $x^2 + 5kx + 16 = 0$ has real and equal roots.
Q.29.	Prove that the points $(3, 0)$, $(6, 4)$ and $(-1, 3)$ are the vertices of an isosceles triangle.
Q.30.	Find the length of the plank that can be used to measure the lengths 4m 20cm and 5m 4cm exactly, in the least time.

Q.31.	D is a point on the side BC of $\triangle ABC$ such that $\angle CAB = \angle CDA$. Show that $CA^2 = CB \times CD$.														
															
Q.32.	If α and β are the zeroes of the polynomial $5x^2 - 16x - 10$, then find the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$.														
Section C (3 marks each)															
Q.33.	Solve the following system of equations graphically: $2x + y = 6$, $2x - y - 2 = 0$. Find the area of the triangle so formed by two lines and x axis.														
Q.34.	Prove that $(\sqrt{2} + \sqrt{3})^2$ is an irrational number, given that $\sqrt{6}$ is an irrational number.														
Q.35.	Find by prime factorisation the LCM of the numbers 18180 and 7575. Also, find the HCF of the two numbers.														
Q.36.	If a and b are the zeroes of the polynomial $x^2 - x - 6$, then find a quadratic polynomial whose zeroes are $(3a + 2b)$ and $(2a + 3b)$.														
Q.37.	Find the zeroes of the quadratic polynomial $\sqrt{3}x^2 - 8x + 4\sqrt{3}$.														
Q.38.	The mode of the following frequency distribution is 36. Find the missing frequency x . <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></tr><tr><td>Frequency</td><td>8</td><td>5</td><td>x</td><td>16</td><td>12</td><td>7</td></tr></table>	Classes	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	Frequency	8	5	x	16	12	7
Classes	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60									
Frequency	8	5	x	16	12	7									
Q.39.	Find a relation between x and y such that the point $P(x, y)$ is equidistant from the points $A(-5, 3)$ and $B(7, 2)$.														
Q.40.	One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting: (i) a non-face card (ii) a black king (iii) neither a red card nor a jack														

Section D (5 marks each)

Q.41. If the median of the following frequency distribution is 32.5, find the values of x and y.

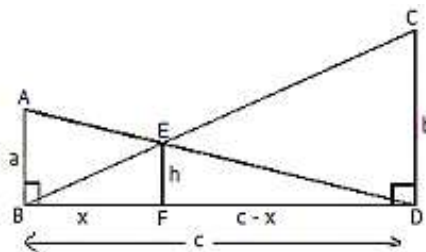
Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	Total
Frequency	x	5	9	12	y	3	2	40

Q.42. A shopkeeper buys a number of books for ₹ 1,800. If he had bought 15 more books for the same amount, then each book would have cost him ₹ 20 less. Find how many books he bought initially.

Q.43. A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table given below. Find the mean and median of the following data.

No. of cars	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Frequency	7	14	13	12	20	11	15	8

Q.44. Two poles of height a and b ($b > a$) are c metres apart. Prove that the height h (in metres) of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is $\frac{ab}{a+b}$.



Q.45. Five years ago, Adil was thrice as old as Bharat. Ten years later Adil shall be twice as old as Bharat. To know the present ages of Adil and Bharat.:

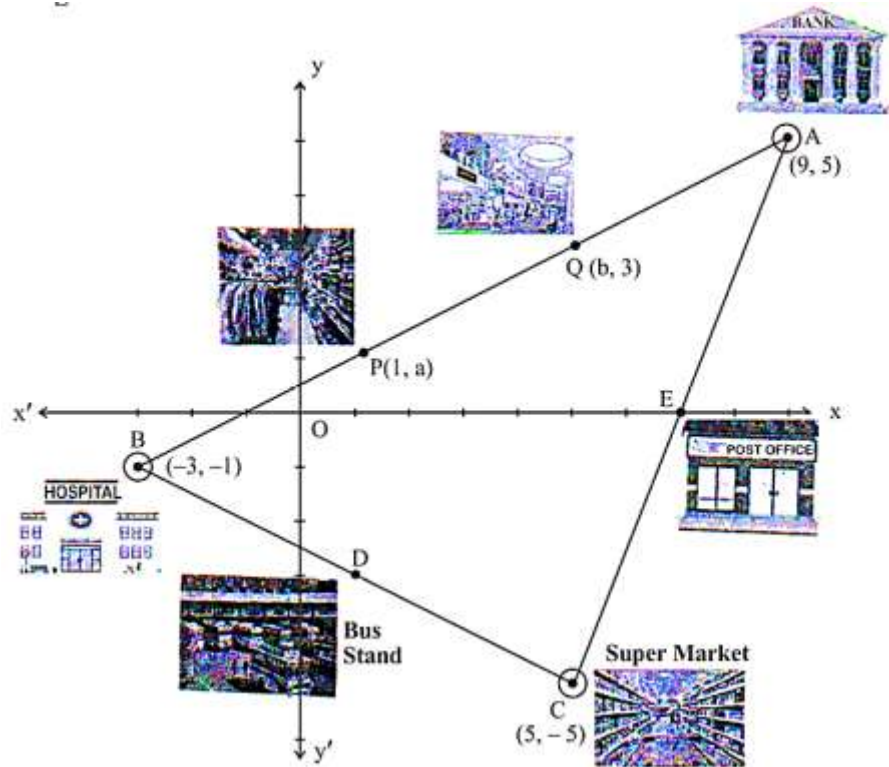
- Form the linear equations representing the above information.
- Show that the system of equations is consistent with unique solution.
- Find the present ages of Adil and Bharat.

Q.46. The vertices of a quadrilateral ABCD are A (6, - 2), B (9, 2), C (5, - 1) and D (2, - 5). Prove that ABCD is a rhombus, and not a square.

Section E (4 marks each)

Q.47. CASE STUDY BASED 1

Partha, a software engineer, lives in Tokyo for his work. He lives in the most convenient area of the city from where bank, hospital, post office and supermarket can be easily accessed. In the graph, the bank is plotted as $A(9, 5)$, hospital as $B(-3, -1)$ and supermarket as $C(5, -5)$ such that A, B, C form a triangle.



Based on the above given information, answer the following questions:

- (i) Find the distance between the bank and the hospital. (1m)
- (ii) In between the bank and the supermarket, there is a post office plotted at E which is their mid-point. Find the coordinates of E. (1m)
- (iii) (a) In between the hospital and the supermarket, there is a bus stop plotted as D, which is their mid-point. If Partha wants to reach the bus stand from the bank, then how much distance does he need to cover? (2m)

OR

- (b) P and Q are two different garment shops lying between the bank and the hospital, such that $BP = PQ = QA$. If the coordinates of P and Q are $(1, a)$ and $(b, 3)$ respectively, then find the values of 'a' and 'b'. (2m)

Q.48.

CASE STUDY BASED 2:

There is a triangular playground as shown in the below figure. Many children and people are playing and walking in the ground. As we see in the figure, in the given right - angled triangle playground, the length of the sides are $5x$ m and $(3x - 1)$ m and area of the triangle is 60 m^2 .



Based on the above situation, answer the following questions.

- (i) Write the quadratic equation for the above situation. (1m)
- (ii) Find the value of x . (1m)
- (iii) a) Find the length of AC. (2m)

OR

- b) Find the length of the sides of the triangle. (2m)

Q.49.

CASE STUDY BASED 3:

A bookstore shopkeeper gives books on rent for reading. He has a variety of books in his store related to fiction, stories and quizzes, etc. He takes a fixed charge for the first two days and an additional charge for the subsequent day. Amruta paid ₹ 22 for a book kept for 6 days; While Radhika paid ₹ 16 for keeping the books for 4 days.



Assume that the fixed charge be ₹ x and additional charge (per day) be ₹ y .

Based on the above information, answer the following questions:

- (i) Frame the algebraic equation for Radhika. (1m)
- (ii) Frame the algebraic equation for Amruta. (1m)
- (iii) a) What are the additional charge for each subsequent day for a book? (2m)

OR

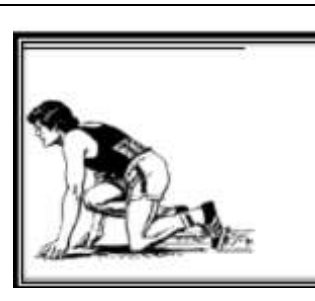
- b) What is the total amount paid by both, if both of them have kept the book for 2 more days? (2m)

Q.50.

CASE STUDY BASED 4:

A stopwatch was used to find the time that it took a group of students to run 100 m.

Time (in sec)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
No. of students	8	10	13	6	3



Based on the above information answer the following questions:

- (i) What is the upper limit of the modal class? 1m
- (ii) What is the sum of lower limits of median class and modal class? 1m
- (iii) (a) Estimate the mean time taken by a student to finish the race. 2m

OR

(b) Find the mode of the above data.

Answers

1	B	2	A	3	C	4	A
5	D	6	A	7	A	8	A
9	D	10	C	11	A	12	B
13	C	14	B	15	D	16	D
17	B	18	D	19	C	20	C
21	C	22	A	23	d	24	c
25	d	26	2.7 cm	27	3	28	$\pm \frac{8}{5}$

	29	Lenth of two sides are equal	30	84cm	31	$\Delta CAB \sim \Delta CDA$, take ratio of corresponding sides		
	32	$\frac{-178}{25}$	33	2 sq.units	35	90900, 1515	36	$x^2 - 5x$
	37	$\frac{2}{\sqrt{3}}$ and $2\sqrt{3}$	38	$x = 10$	39	$24x - 2y - 19 = 0$	40	$\frac{10}{13}, \frac{1}{26}, \frac{6}{13}$
	41	$x = 3, y = 6$	42	30	43	40.7, 42	45	(i) $x - 3y = -10$, $x - 2y = 10$, yes, 50, 20
	47	(i) $6\sqrt{5}$ units (ii) (7,0) (iia) $8\sqrt{2}$ units (iib) 1, 5	48	(i) $3x^2 - x - 24 = 0$ (ii) 3m (iia) 17 m (iib) 15 m, 8 m, 17	49	(i) $x + 2y = 16$ (ii) $x + 6y = 22$ (iii) $y = ₹3$ OR Total = ₹50	50	(i) 60 (ii) 80 (iii) 43 sec OR 46
