INDIAN SCHOOL AL WADI AL KABIR

Post Mid-Term Revision Paper (2023-24)

Class: IX Sub: MATHEMATICS Max Marks: 80

Date: 20/11/2023 Time:3 hours

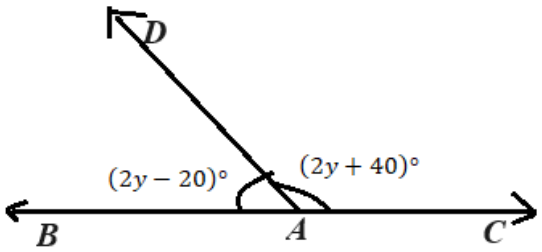
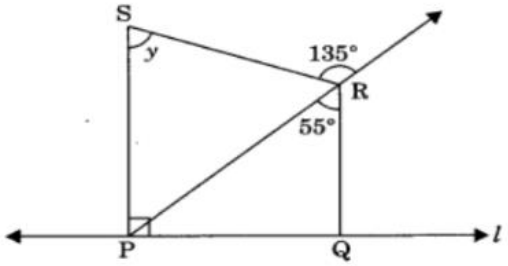
General Instructions:

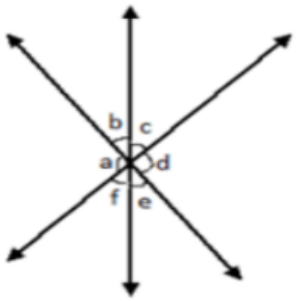
1. This question paper is divided into 5 sections- A, B, C, D and E.
2. Section A-(MCQ) comprises of 18 questions of 1 mark each and 2 Assertion Reasoning questions of 1 mark each.
3. Section B-(Short answer) comprises of 5 questions of 2 marks each.
4. Section C-(Long answer) comprises of 6 questions of 3 marks each.
5. Section D- (Long answer) comprises of 4 questions of 5 marks each.
6. Section E- Comprises of 3 Case study-based questions of 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
7. All questions are compulsory. However, an internal choice in 2 Qs of 2marks, 2 Qs of 3 marks and 2 Questions of 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.

Section A

PART-1(MCQ-1 mark each)

Q.1.	The value of $\sqrt[4]{625^{-2}}$ is:							
	A	$\frac{1}{25}$	**B**	$\frac{1}{50}$	**C**	50	**D**	25
Q.2.	By applying SAS congruence rule, you want to establish that ΔPQR ≅ΔFED. It is given that PQ = FE and RP = DF. What additional information is needed to establish the congruence?							
	A	QR = DE	**B**	∠P = ∠F	**C**	∠R = ∠D	**D**	∠Q = ∠D
Q. 3.	The degree of the polynomial $\frac{x^3+x^4-x^6}{x^2}$.							
	A	3	**B**	1	**C**	2	**D**	4
Q. 4.	The simplest rationalizing factor of $\frac{1}{\sqrt{75}}$ is:							

	A	$4\sqrt{5}$	**B**	$2\sqrt{3}$	**C**	$\sqrt{3}$	**D**	$5\sqrt{3}$
Q. 5.	The value of $525^2 - 475^2$ is:							
	A	100	**B**	1000	**C**	5000	**D**	50000
Q. 6.	A real number which is non-terminating and non-recurring decimal expansion is:							
	A	0.125	**B**	0.121221222…	**C**	0.454545....	**D**	2.478478
Q. 7.	If y = 3x + 5, then which of the following option is true?							
	A	a unique solution	**B**	Two solutions	**C**	No solution	**D**	Infinitely many solutions
Q.8.	According to Euclid's definition, the ends of a line are;							
	A	Breadthless	**B**	Points	**C**	Lengthless	**D**	None of these
Q.9.	In the given figure, BAC is a line. The value of y is: 							
	A	40	**B**	60	**C**	80	**D**	20
Q.10.	In the given fig. PS⊥ l, RQ⊥ l, then find the value of y. 							

	A	55°	**B**	90°	**C**	80°	**D**	135°
Q.11.	The length of each side of an equilateral triangle having an area of $9\sqrt{3}$ cm^2 is:							
	A	$3\sqrt{3}$	**B**	6	**C**	36	**D**	$7\sqrt{3}$
Q.12.	The point whose ordinate is 4 is:							
	A	$(4,-4)$	**B**	$(4,0)$	**C**	$(-4,4)$	**D**	$(0,-4)$
Q.13.	The class marks of the frequency distribution are 10, 20, 30, 40, ...The class representing the class mark 30 is:							
	A	25 - 35	**B**	15 - 25	**C**	5 - 15	**D**	35 - 45
Q.14.	Abscissa of a point is positive in the quadrant:							
	A	I and II	**B**	I only	**C**	III and IV	**D**	IV and I
Q.15.	In the figure which of the following statements is true? (i) a + b = d + c. (ii) a + c + e = 180° (iii) b + f = c + e. 							
	A	(i) only	**B**	(ii) only	**C**	(ii) and (iii) both	**D**	(iii) only
Q.16.	Five friends Annie, Amisha, Manu, Vaishu and Sahar are living in a hostel. At the end of every month, they calculate the expenses on food and shopping. The table below shows their monthly expenses for the month of November.							

Name	Annie	Amisha	Manu	Vaishu	Sahar
Expenditure (in ₹)	3000	5000	6000	4500	7000

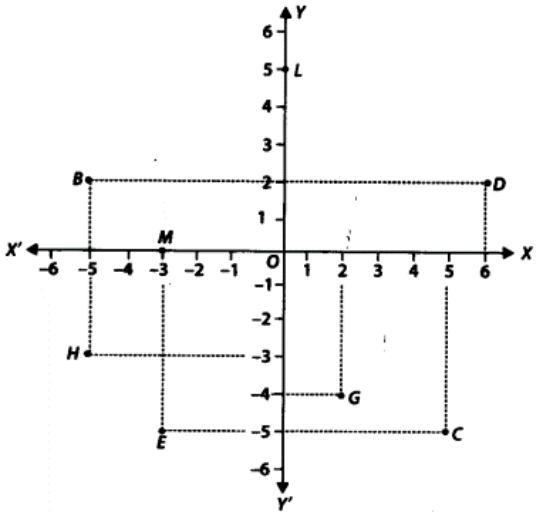
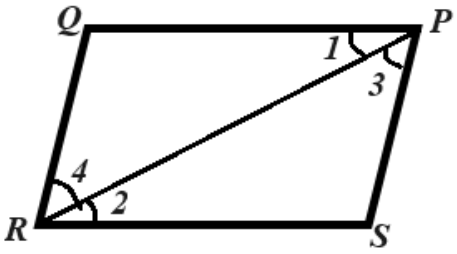
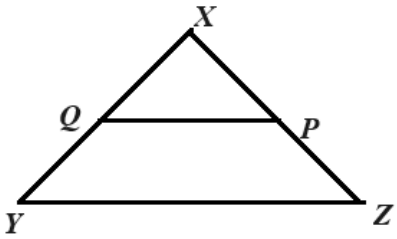
	A	Histogram	**B**	Bar Graph	**C**	Frequency Polygon	**D**	Frequency polygon with histogram
Q.17.	It is known that if x + y = 10 then x + y + z = 10 + z. The Euclid's axiom that illustrates this statement is:							
	A	2nd Axiom	**B**	1st Axiom	**C**	3rd Axiom	**D**	4th Axiom

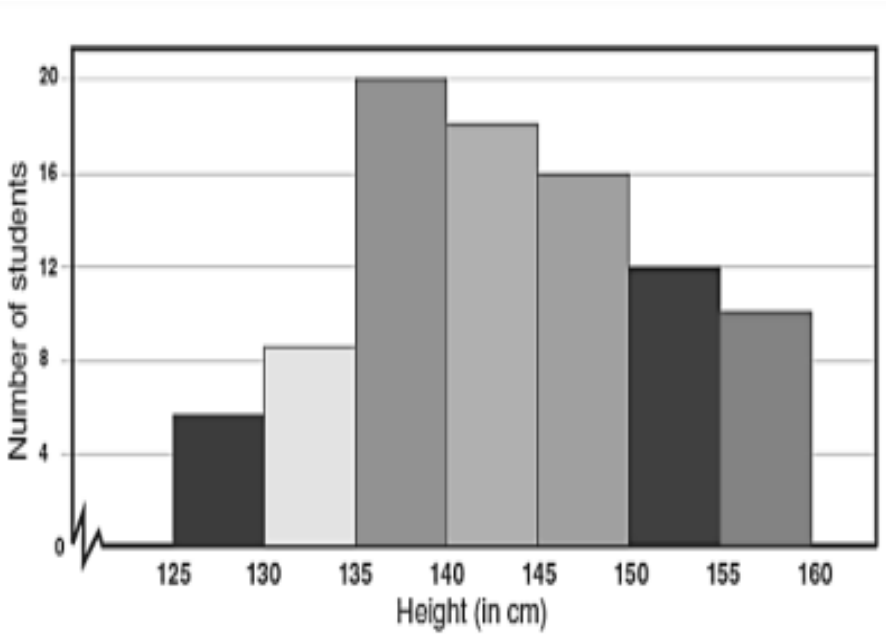
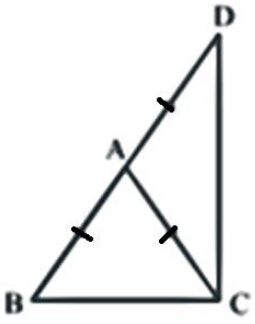
<table>
<tr><td>Q.18.</td><td colspan="8">In a frequency distribution, the mid value of a class is 10 and the width of the class is 6. The lower limit of the class is:</td></tr>
<tr><td></td><td>A</td><td>6</td><td>B</td><td>7</td><td>C</td><td>8</td><td>D</td><td>12</td></tr>
<tr><td></td><td colspan="8">DIRECTION: In the question number 19 and 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option.</td></tr>
<tr><td>Q.19.</td><td colspan="8">Statement A (Assertion): $\sqrt{7}$ is an irrational number.
Statement R(Reason): Square root of a positive integer which is not a perfect square is an irrational number.

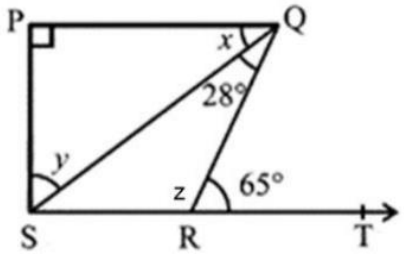
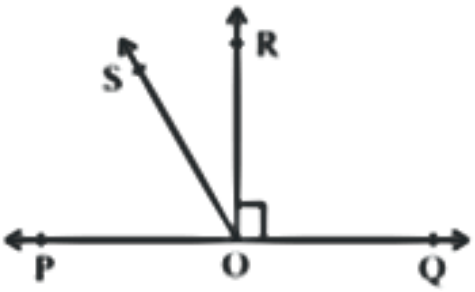
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)
(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.</td></tr>
<tr><td>Q.20.</td><td colspan="8">Statement A (Assertion): Each angle of an equilateral triangle is 60°.
Statement R(Reason): Angles opposite to equal sides of a triangle are equal.
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.</td></tr>
<tr><td></td><td colspan="8">Section B
(S.A-2 mark each)</td></tr>
<tr><td>Q.21.</td><td colspan="8">Find the sum of 0.333… and 0.454545…

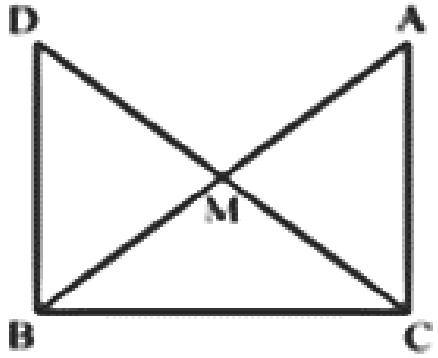
OR

Simplify $(4\sqrt{3} - 3\sqrt{5})^2$</td></tr>
</table>

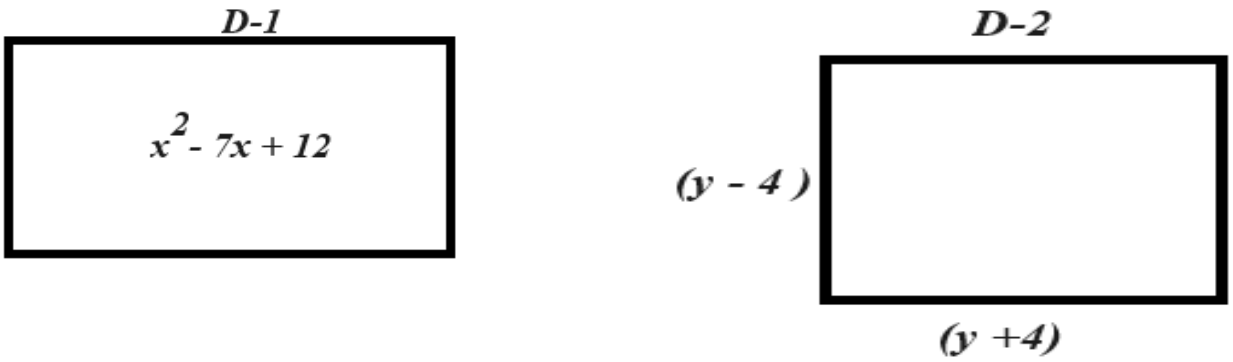
Q.22.	Observe figure and answer the following questions. (i) Coordinates of point D. (ii) Point identified by the coordinates of $(2, -4)$. (iii) Ordinate of point H (iv) Points with Ordinate 2. 
Q.23.	In the given figure, it is given that $\angle 1 = \angle 4$ and $\angle 3 = \angle 2$. By which Euclid's axiom, it can be shown that if $\angle 2 = \angle 4$, then $\angle 1 = \angle 3$.  OR In the given figure, if OX = $\frac{1}{2}$ XY, PX = $\frac{1}{2}$ XZ and OX = PX, show that XY = XZ. 
Q.24.	Check whether $(2x + 1)$ is a factor of the polynomial f(x) = $x^3 - 2x^2 + x - 1$. OR Factorize: $3x^2 + 2y^2 + 18 - 2\sqrt{6}\,xy - 12y + 6\sqrt{6}\,x$.

Q.25.	The following histogram shows the heights of students of a class: Read the histogram and answer the following questions:  (i) What is the width of the class? (ii) Which is the class interval having the highest frequency? (iii) How many students have height less than 140 cm? (iv) How many students have height 140 cm and more but less than 155 cm?
	Section- C (S.A-3 mark each)
Q.26.	ΔABC is an isosceles triangle in which AB = AC. Side BA is produced to D such that AD = AB. Show that ∠ BCD is a right angle. 

Q.27.	Factorize $216x^3 + \frac{1}{125}$ OR Find the value of $ab + bc + ca, if\ a + b + c = 9$ and $a^2 + b^2 + c^2 = 35$.
Q.28.	The perimeter of a triangular garden is 900cm and its sides are in the ratio 3 : 5 : 4. Using Heron's formula, find the area of triangular garden.
Q.29.	State any three Euclid's Postulates.
Q.30.	Plot the points A (1,3), B (1, −1), C (7,−1) and D (7, 3) in cartesian plane. Join them in order and name the figure so obtained.
Q.31.	In the given figure, if PQ⊥PS, PQ∥SR, ∠SQR = 28° and ∠QRT = 65°, then find the values of x y and z respectively.  OR In Fig. POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR Prove that ∠ ROS = $\frac{1}{2}$ (∠ QOS – ∠ POS). 

	Section- D (L.A-5 mark each)
Q.32.	Rationalise the denominator and find the value of a and b: $\frac{3\sqrt{2}-2\sqrt{3}}{3\sqrt{2}+2\sqrt{3}} - \frac{3\sqrt{2}+2\sqrt{3}}{3\sqrt{2}-2\sqrt{3}}$ = a + b $\sqrt{6}$
Q.33.	Factorise: $2x^3 - 9x^2 + x + 12$ OR If x = 2 and x = 0 are zeros of the polynomial $2x^3 - 5x^2 + px + b$, then find the value of p and b.
Q.34.	Prove that two triangles are congruent if two angles and the included side of one triangle are equal to two angles and the included side of another triangle. OR In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B. Show that: (i) Δ AMC ≅ Δ BMD (ii) ∠ DBC is a right angle. (iii) Δ DBC ≅ Δ ACB 
Q.35.	Draw a histogram for the following frequency distribution.

Marks	0 – 20	20 – 30	30 – 40	40 – 50	50 - 60	60 - 70	70 - 100
No. of students:	5	4	3	8	4	15	8

	Section- E (CASE STUDY BASED QUESTIONS-4mark each)
Q.36.	CASE STUDY-I POLYNOMIALS Forests still cover about 30 per cent of the world's land area but they are disappearing at an alarming rate. between 1990 forest according to the study in the "journal nature". about 17 per cent of the Amazonian rainforest has been destroyed sample 1 square sample 2 rectangle sample 3 rectangle over the past 50 years. madhuban art gallery organized an exhibition to create awareness about afforestation with title "पेड़ लगाओ, सुखी हो जाओ" to raise the fund which is to be given for environment protection. they have asked people to come with their innovative painting and given size of painting in form of square and rectangle. Answer the following questions on the basis of the of above information.  Based on the above information, answer the following questions. (i) Find the length and breadth of the rectangle D-1 (1m) (ii) Find the area of the rectangle D-2 (1m) (iii) Expand $(3x - 2y + 7)^2$ (2m) OR Evaluate $(97)^3$ by using proper identity. (2m)

Q.37.

CASE STUDY-II

On his birthday, Manoj planned that this time he celebrates his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 apples to each child and 3 apples to each adult working there along with birthday cake. He distributed 60 total apples.

Based on the above information, answer the following questions with reasons.

(i) How to represent the above situation in linear equations in two variables by taking the number of children as 'x' and the number of adults as 'y'? (1m)

(ii) Write any two solutions of the equation $x + 2y = 4$ (1m)

(iii) Find the value of b, if x = 5, y = 3 is a solution of the equation 5y + 3x= b. And write the value of a, b and c. (2m)

OR

If the number of children is 15, then find the number of adults?
Also, write the linear equation in standard form.

Q.38. CASE STUDY-III

UFO's are any unexplained moving object observed in the sky, especially one assumed by some observers to be of extraterrestrial (coming from a place outside the earth) origin. Rahul a student of class IX has an interest in a Space Science. So, he makes a model of a triangular shape of UFO which is shown in the below figure. The measurement of the sides of UFO are in the ratio 5:5:8 and its perimeter is 180 cm respectively.

(i) What is the measure of the sides of the triangular UFO? (1m)

(ii) Find the semi perimeter of the given UFO shape. (1m)

(iii) What is the area of the UFO?

OR (2m)

Find the total cost to make the UFO,
if the rate of the material is ₹ 800 per cm^2.

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ANSWERS							
Q.1	A	Q.2	B	Q.3	D	Q.4	C
Q.5	D	Q.6	B	Q.7	D	Q.8	B
Q.9	A	Q.10	C	Q.11	B	Q.12	C
Q.13	A	Q.14	D	Q.15	C	Q.16	B
Q.17	A	Q.18	B	Q.19	A	Q.20	A
Q.21	$\frac{26}{33}$ OR $(93 - 24\sqrt{15}$	Q.22	(i)D(6,2), (ii)G, (iii)Ordinate of H=-3, (iv) D and B	Q.23	Proof	Q.24	Not a factor OR $(\sqrt{3}\,x - \sqrt{2}y + 3\sqrt{2})^2$
Q.25	(i) 5 (ii) 135- 140 (iii)35 (iv)46	Q.26	Proof	Q.27	(6x+$\frac{1}{5}$)× [$6x^2$- $\frac{6}{5}$ x+ $\frac{1}{25}$] OR 23	Q.28	33750 m^2
Q.29	Any three	Q.30	Graph	Q.31	Z=115°,x =37°, Y=53°, or Proof	Q.32	a =0, b= – 4
Q.33	(x+1)((x-4)(2x-3) OR P=2, b=0	Q.34	Proof	Q.35	Graph	Q.36	i)$((x-4)and(x-3)$ ii) $y^2 - 16$ iii)$9x^2 + 4\ y^2 + 49 - 12xy - 28y + 42x$ OR 9,12,673
Q.37	$i)2x + 3y = 60$ ii)Any two solutions iii)30 $3x + 5y - 30 = 0$, a=3, b=5, c= -15	Q.38	i)50cm, 50cm and 80cm ii)90cm iii)1200cm^2 or ₹ 960000				