



INDIAN SCHOOL AL WADI AL KABIR

Mid-Term **Practice Paper** (2022-23)

Class: IX

Sub: MATHEMATICS

Max Marks: 80

Time: 3 hours

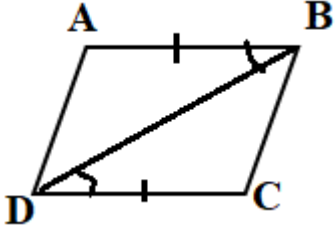
**General Instructions:**

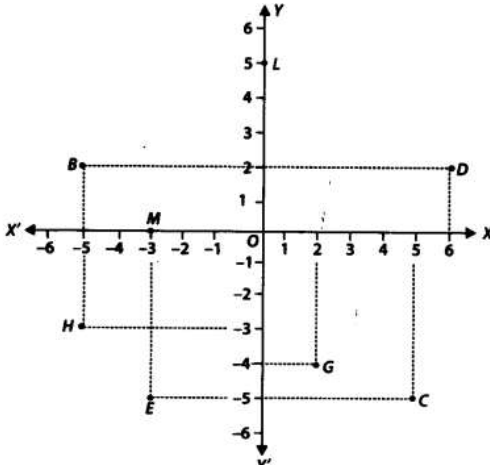
1. This question paper is divided into 3 sections- A, B and C.
2. Section A- PART-1(MCQ) comprises of 6 questions of 1 mark each.
3. Section A- PART-2 (Very short answer) comprises of 16 questions of 1 mark each.
4. Section B- PART-1(Short answer) comprises of 5 questions of 2 mark each.
5. Section B- PART-2(Long answer) comprises of 4 questions of 3 marks each.
6. Section C- PART-1 (Case study) comprises of 4 questions of 4 marks each.
7. Section C - PART-2 comprises of 4 questions of 5 marks each.
8. Internal choice has been provided for certain questions.

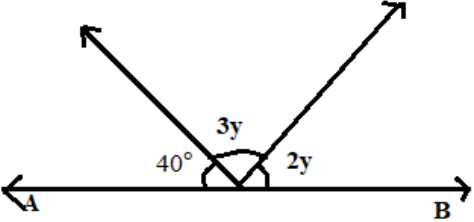
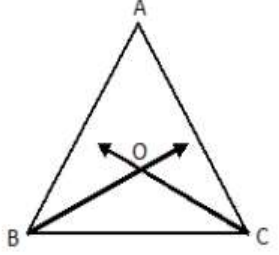
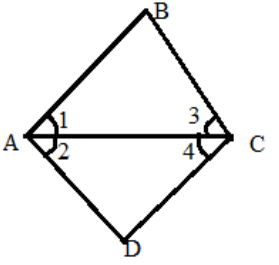
**Section A**

PART-1(MCQ-1 mark each)

<b>Q.1.</b>	If the area of an equilateral triangle is $81\sqrt{3}$ cm <sup>2</sup> . The perimeter is:							
	<b>A</b>	27cm	<b>B</b>	9cm	<b>C</b>	54cm	<b>D</b>	81cm
<b>Q.2.</b>	Identify a rational number among the following numbers:							
	<b>A</b>	$2\sqrt{28} \div \sqrt{4}$	<b>B</b>	$\sqrt{\frac{20}{4}}$	<b>C</b>	$\sqrt{2} \times \sqrt{3}$	<b>D</b>	$2.\overline{27}$
<b>Q.3.</b>	Euclid divided his famous treatise 'The Elements' into							
	<b>A</b>	13 chapters	<b>B</b>	12 chapters	<b>C</b>	11 chapters	<b>D</b>	9 chapters
<b>Q.4.</b>	If the angle exceeds its complement by $20^\circ$ , then the measurement of the smallest angle is:							

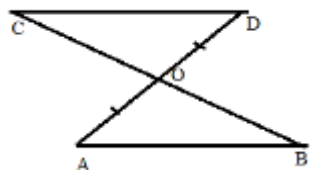
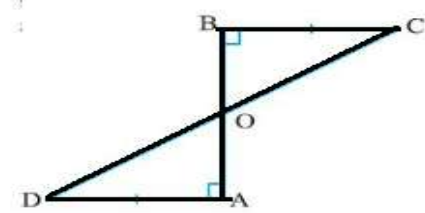
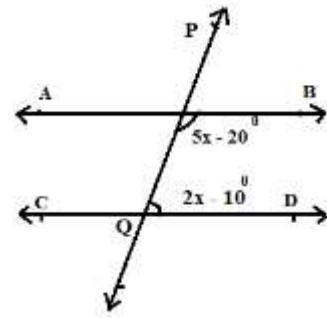
	A	30°	B	35°	C	55°	D	90°
Q. 5.	In the figure, $AB=DC$ , $\angle ABD = \angle CDB$ , which congruence rule would you apply to prove $\Delta ABD \cong \Delta CDB$ ?							
	A	RHS	B	SSS	C	ASA	D	SAS
Q. 6.	Choose a point which lies in the Y-axis							
	A	(3, 2)	B	(-3, 2)	C	(0,5)	D	(5,0)
<b>Section A</b>								
<b>PART-II</b> (Very short answer-1 mark each)								
Q. 7.	Two angles measure $(30^\circ - a)$ and $(125^\circ + 2a)$ . If each one is the supplement of the other, then find the value of a.							
Q.8.	The length of the sides of a triangle is 5 cm, 7 cm and 8 cm. Find the area of the triangle. OR The base of an isosceles triangle is 12 cm and its perimeter 32 cm. Find its area.							
Q. 9.	Rani and Rama have the same weight. If they each gain weight by 5 kg, how will their new weights be compared? State the axiom used.							
Q. 10.	Rationalise $\frac{1}{3-2\sqrt{2}}$ .							

<p><b>Q.11.</b></p>	<p>See the given figure and write the following:</p> <p>(i) The coordinates of B.</p> <p>(ii) The coordinates of C.</p> <p>(iii) The abscissa of the point D.</p> <p>(iv) The ordinate of the point H.</p> <div style="text-align: right;">  </div>
<p><b>Q.12.</b></p>	<p>Find the value of <math>(27)^{\frac{2}{3}} \times (81)^{\frac{-1}{4}}</math></p> <p style="text-align: center;">OR</p> <p>Find the value of x, if <math>32^x \times 2^5 = 32^2</math></p>
<p><b>Q. 13.</b></p>	<p>Two sides of a triangle are 13cm and 14cm and its semi-perimeter is 18cm, then what will be the third side of the triangle?</p>
<p><b>Q. 14.</b></p>	<p>Write any two irrational numbers in between 0.1 and 0.12.</p> <p style="text-align: center;">OR</p> <p>Find the sum of <math>0.\overline{3}</math> and <math>0.\overline{4}</math></p>
<p><b>Q. 15.</b></p>	<p>Find the class size of the class 32- 36?</p> <p style="text-align: center;">OR</p> <p>Find the class-mark of the class 130-150?</p>
<p><b>Q. 16.</b></p>	<p>Express <math>\frac{2157}{625}</math> in the decimal form and state whether it is terminating or not</p>

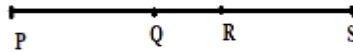
<p><b>Q. 17.</b></p>	<p>In the figure below, calculate the value of <math>y</math>.</p> 
<p><b>Q. 18.</b></p>	<p>If the point A (2,0), B (-6,0) and C (3, a-3) lie on X-axis, then calculate the value of <math>a</math>.</p>
<p><b>Q. 19.</b></p>	<p>In the given figure, ABC is an isosceles triangle with <math>AB=AC</math>, the bisectors of <math>\angle ABC</math> and <math>\angle BCA</math>, intersect each other at point O. If <math>\angle BOC = 100^\circ</math>, then find the measurement of <math>\angle BAC</math>.</p> 
<p><b>Q. 20.</b></p>	<p>In the given figure, we have <math>\angle 1 = \angle 3</math> and <math>\angle 2 = \angle 4</math>. Show that <math>\angle A = \angle C</math>. Write the axiom used.</p> 
<p><b>Q. 21.</b></p>	<p>Write the quadrant or axis of each of the following co-ordinates: <math>(7, -8)</math>, <math>(-0.5, -4)</math>, <math>(0, 2)</math>, <math>(7, 0)</math></p> <p style="text-align: center;">OR</p> <p>A point <math>(-x, y)</math> lies in the II quadrant. If the signs of <math>x</math> and <math>y</math> are interchanged, then in which quadrant the point lies? Also, write the co-ordinates so obtained.</p>
<p><b>Q. 22.</b></p>	<p>Find the range of the following data 25, 18, 20, 22, 16, 6, 15, 12, 30, 32, 10, 19, 8, 11 and 20.</p>

**Section B**

**PART-I** (S.A-2 mark each)

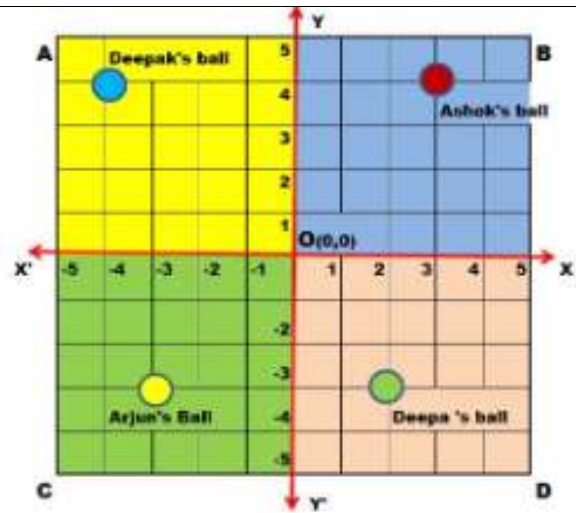
<b>Q. 23.</b>	<p>The marks obtained by 25 students of class X in an examination are given below: 12,8,18, 16, 12, 18,15, 15, 19,14, 13, 7, 15,12, 9,7,6, 18,14, 5,10, 11, 9, 14,16.</p> <p>Represent the data in the form of a frequency distribution using 10-15(15 not included) as one of the class intervals.</p>
<b>Q. 24.</b>	<p>Line-segment AB is parallel to another line segment CD. O is the midpoint of AD. Show that <math>\triangle AOB \cong \triangle DOC</math>.</p> <p style="text-align: center;">OR</p> <p>AD and BC are equal perpendiculars to a line segment AB. Show that <math>\triangle CBO \cong \triangle DAO</math>.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>
<b>Q. 25.</b>	<p>A number line consists of an infinite number of points. Points on it are associated with a rational number.</p> <p>Khushi says – ‘A point on the number line can represent different forms of a rational number.’</p> <p>Akash says – ‘I think each point represents a unique rational number.’ Who is correct? Give an example to support your argument.</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">Represent <math>\sqrt{7.5}</math> on the number line.</p>
<b>Q. 26.</b>	<p>In the given figure, if <math>AB \parallel CD</math>, <math>\angle BPQ = (5x - 20^\circ)</math> and <math>\angle PQD = (2x - 10^\circ)</math>, find the value of each angles</p> 

**Q. 27.** In figure, if  $PQ = RS$ , then prove that  $PQ = RS$ . Write the suitable axiom used to prove this.

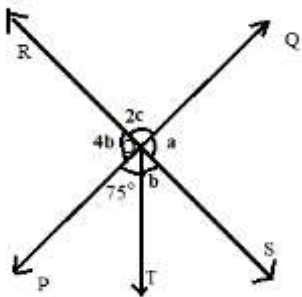


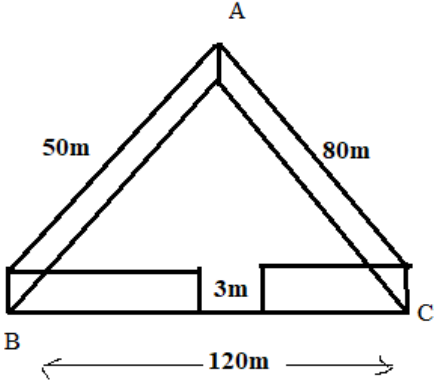
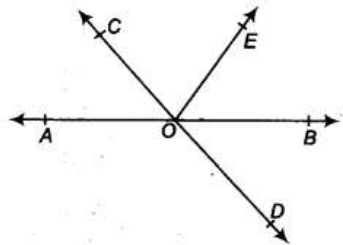
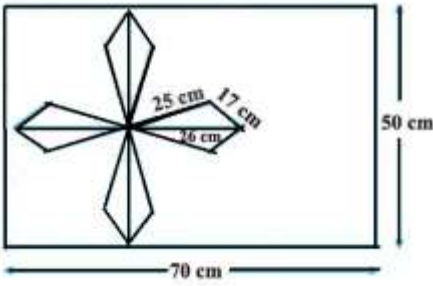
Section B-PART-II (CASE STUDY BASED QUESTIONS)

**Q. 28. CASE STUDY -I**  
**Read the Source/Text given below and answer any four questions:**  
 There is a square parking lot ABCD in the middle of Saket colony in Delhi. Four children Deepak, Ashok, Arjun and Deepa went to play with their balls. The color of the testis of Ashok, Deepak, Arjun and Deepa are loss, blue, yellow and green respectively. All four children roll their testis from center decimal point O in the focus of  $YOY'$ ,  $X'OY'$ ,  $X'OY'$  and  $XOY'$ . Their balls stopped as shown in the above visualize. Answer the stick to questions:



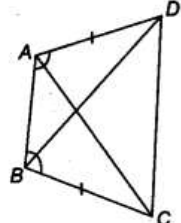
QN. I	What are the coordinates of the ball of Ashok?							
	A	(4,3)	B	(4, 4)	C	(3, 4)	D	(4, -4)
QN. II	What are the coordinates of the ball of Deepa?							
	A	(2,-3)	B	(2, 2)	C	(2, 3)	D	(2, 2)
QN.III	What the line $XOX'$ is called?							
	A	Y-axis	B	Ordinate	C	X-axis	D	Origin
QN. IV	Find the distance of the position of Deepak's ball from the X-axis?							
	A	-3 units	B	4 units	C	3 units	D	-4 units
QN. V	Find the ordinate of the position of Arjun's ball.							
	A	-4	B	-3	C	3	D	4

Q. 29.	<p><b>CASE STUDY-II</b></p> <p><b>Read the Source/Text given below and answer any four questions:</b></p> <p>Arun is studying in class IX. Once he was doing his geometry home work. He was trying to measure the angles using the Dee, but his dee was old and his Dee's numbers were erased and the lines on the dee were visible.</p> <p>Let us help Arun to find the angles. He found that two straight lines PQ and RS intersect each other at O and <math>\angle POT = 75^\circ</math>.</p>							
QN. I	What was the value of the $\angle b$ ?							
	A	30°	B	45°	C	60°	D	21°
QN. II	The angle which is equal to $75^\circ + b$ is:							
	A	90°	B	a	C	c	D	2c
QN.III	What was the value of the $\angle a$ ?							
	A	60°	B	84°	C	90°	D	70°
QN. IV	What was the value of the $2c^\circ$ ?							
	A	21°	B	69°	C	96°	D	48°
QN. V	The value of $4b + 2c$ is:							
	A	180°	B	360°	C	90°	D	100°
Q. 30.	<p><b>CASE STUDY -III</b></p> <p>Two class mates Sonu and Salma simplified some expressions during their revision hour and try to explain each other.</p> <p>Sonu explains the simplification of <math>3\sqrt{45} - \sqrt{125} + \sqrt{45}</math> and Salma was finding the value of <math>\frac{1}{\sqrt{2} + 1}</math> after the rationalization by putting <math>\sqrt{2} = 1.414</math></p> <p>i) Write the simplification of <math>3\sqrt{45} - \sqrt{125} + \sqrt{45}</math>.</p> <p>ii) Demonstrate the method of simplification and finding the value of <math>\frac{1}{\sqrt{2} + 1}</math>.</p>							

<p>Q. 31.</p>	<p><b>CASE STUDY BASED-IV</b></p> <p>A triangular park has sides 120 m, 80m and 50 m. A gardener Dhania has to put a fence all around it and also plant grass inside.</p> <p>i)How much area does she need to plant?</p> <p>ii)Find the cost of fencing it with barded wire at the rate of ₹20 per metre leaving a space 3m wide for a gate in one side.</p>	
<p><b>Section C</b></p> <p><b>PART-1 (S.A-3 mark each)</b></p>		
<p>Q. 32.</p>	<p>In figure, lines AB and CD intersect at O. If <math>\angle AOC + \angle BOE = 70^\circ</math> and <math>\angle BOD = 40^\circ</math>, find <math>\angle BOE</math> and reflex <math>\angle COE</math>.</p>	
<p>Q.33.</p>	<p>A design is made on a rectangular tile of dimensions 50cm × 70cm as shown in figure. The design shows 8 triangles, each of sides 26cm, 17cm and 25 cm. Find the total area of the design.</p> <p style="text-align: center;">OR</p> <p>The sides of a triangle are in the ratio 13:14:15 and its perimeter is 84 cm.</p> <p>Find the area of the triangle.</p>	
<p>Q.34.</p>	<p>If <math>x = 1 - \sqrt{2}</math>, find the value of <math>(x - \frac{1}{x})^3</math>.</p>	

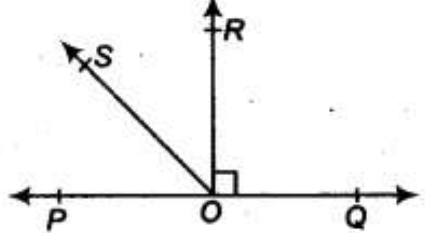


**Q.35.** ABCD is a quadrilateral in which  $AD = BC$  and  $\angle DAB = \angle CBA$ .  
 Prove that (i)  $\triangle ABD \cong \triangle BAC$  (ii)  $BD = AC$



**Section C**  
**PART-II** (S.A-5 mark each)

**Q.36.** In figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that  $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$



**Q.37.** If  $x = \frac{3+\sqrt{2}}{3-\sqrt{2}}$  and  $y = \frac{3-\sqrt{2}}{3+\sqrt{2}}$ , then find the value of  $x^2 + y^2$  ?

OR

Prove that  $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$ .

**Q.38.** The marks obtained (out of 100) by a class of 80 students are given below.  
 Draw a histogram and a frequency polygon on the same graph to represent the data.

Marks	No. of students
10-20	6
20-30	17
30-50	15
50-70	16
70-100	26

**Q.39.** i) Plot the points A (0,4), B (-3,0), C (0, -4), D (3,0).  
 ii) Name the figure obtained by joining the points A, B, C and D  
 iii) Also, name the quadrants in which sides AB and AD lie.

ANSWERS

Q.1) C	Q.2) D	Q.3) A	Q.4) B
Q.5) D	Q.6) C	Q.7) $25^\circ$	Q.8) $10\sqrt{3}$ or $48\text{cm}^2$
Q.9) Second axiom	Q.10) $3 + 2\sqrt{2}$	Q.11) i) B (-5,2), ii)C (5, -5), iii)6, iv)- 3	Q.12) 3 or $x=1$
Q.13) 9cm	Q.14) 0.1010010001.... 0.1020020002.... Or $\frac{7}{9}$	Q.15) 4 Or 140	Q.16.) 3.4512(terminating)
Q.17) $28^\circ$	Q.18) 3	Q.19) $20^\circ$	Q.20) Second axiom
Q.21) II, III, Y-axis, X-axis Or IV <sup>th</sup> quadrant-(x, -y)	Q.22)24	Q.23) Frequency table	Q.24) SAS
Q.25) Both statements are correct.	Q.26) $130^\circ, 50^\circ$	Q.27) Third axiom	Q.28) I-C, II-A, III-C, IV-B, V-B
Q.29) I-D, II-D, III- B, IV-C, V-A	Q.30) i): $7\sqrt{5}$ ii) $\sqrt{2} - 1, 0.414$	Q.31) i) $375\sqrt{15}\text{m}^2$ ii) $\square 4940$	Q.32) $\angle BOE = 30^\circ$ and reflex $\angle COE = 250^\circ$ .
Q.33) $1632\text{ cm}^2$ Or $336\text{ cm}^2$	Q.34) 8	Q.35) Proof	Q.36) Proof98
Q.37)98 or Proof	Q.38) Histogram	Q.39) ii) Rhombus iii) AB-II quadrant, AD-I quadrant	

