



General Instructions:-

I. All questions are compulsory.

Q.No.	Questions	Marks												
Q1	The midpoint of the line segment joining the points(-2,8) and (-6,-4) (a) (-4,-6) (b) (2,6) (c) (-4,2) (d) (4,2)	1												
Q2	The median class of the following data is <table border="1" data-bbox="193 763 1315 916"><thead><tr><th>Marks</th><th>Below 20</th><th>Below 40</th><th>Below 60</th><th>Below 80</th><th>Below 100</th></tr></thead><tbody><tr><td>No. of Students</td><td>17</td><td>22</td><td>29</td><td>37</td><td>50</td></tr></tbody></table> (a) 20-40 (b) 40-60 (c) 60-80 (d) 80-100	Marks	Below 20	Below 40	Below 60	Below 80	Below 100	No. of Students	17	22	29	37	50	1
Marks	Below 20	Below 40	Below 60	Below 80	Below 100									
No. of Students	17	22	29	37	50									
Q3	The perimeter of a quadrant of a circle of radius $7/2$ cm is: (a) 6.5cm (b) 12.5cm (c) 8.5cm (d) 4.5cm	1												
Q4	If the circumference of a circle is 44cm, then the area of the circle is: (a) 270cm^2 (b) 48cm^2 (c) 170cm^2 (d) 154cm^2	1												
Q5	Assertion: points A(3,2),B(-2,-3) and C(2,3) form a triangle Reason : Sum of the two sides of a triangle is always greater than the third side a) Both Assertion and Reason are true and reason is correct explanation for the assertion b) Both Assertion and Reason are true but reason is not correct explanation for assertion. c) Assertion is correct but reason is false. d) Assertion is false but reason is true.	1												
Q6	Find the mode of the following frequency distribution. <table border="1" data-bbox="193 1704 1315 1827"><thead><tr><th>Marks</th><th>10-20</th><th>20-30</th><th>30-40</th><th>40-50</th><th>50-60</th></tr></thead><tbody><tr><td>No. of students</td><td>12</td><td>35</td><td>45</td><td>25</td><td>13</td></tr></tbody></table>	Marks	10-20	20-30	30-40	40-50	50-60	No. of students	12	35	45	25	13	2
Marks	10-20	20-30	30-40	40-50	50-60									
No. of students	12	35	45	25	13									
Q7	Find a relation between x and y such that pointp(x,y) is equidistant from the points A(1,4) and B(-1,2)	2												

Q8	If $(3,3)$, $(6,y)$, $(x,7)$ and $(5,6)$ are the vertices of a parallelogram taken in order, find x and y .	2																
Q9	A chord of a circle of radius 10cm subtends a right angle at the centre find the area of minor sector.	2																
Q10	The length of the minute hand of a clock is 14cm. Find the area swept by minute hand in 30 minute.	2																
Q11	A chord AB of a circle of a radius 15 cm makes an angle of 60° at the centre of the circle. Find (i) area of major sector (ii) area of minor segment	3																
Q12	Find the mean of the following data <table border="1" data-bbox="193 551 1315 674"> <tbody> <tr> <td>Class interval</td> <td>100-150</td> <td>150-200</td> <td>200-250</td> <td>250-300</td> <td>300-350</td> </tr> <tr> <td>Frequency</td> <td>4</td> <td>5</td> <td>12</td> <td>2</td> <td>2</td> </tr> </tbody> </table>	Class interval	100-150	150-200	200-250	250-300	300-350	Frequency	4	5	12	2	2	3				
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Frequency	4	5	12	2	2													
Q13	Find the ratio in which the y -axis divides the line segment joining the points $(5,-6)$ and $(-1,-4)$. Also, find the coordinates of the point of division.	3																
Q14	If the median of the distribution given below is 28.5, find the value of x and y . <table border="1" data-bbox="193 927 1321 1111"> <tbody> <tr> <td>Class interval</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>5</td> <td>x</td> <td>20</td> <td>15</td> <td>y</td> <td>5</td> <td>60</td> </tr> </tbody> </table>	Class interval	0-10	10-20	20-30	30-40	40-50	50-60	Total	Frequency	5	x	20	15	y	5	60	3
Class interval	0-10	10-20	20-30	30-40	40-50	50-60	Total											
Frequency	5	x	20	15	y	5	60											
Q15	Show that $A(1,-1)$, $B(-2,-4)$, $C(-1,-1)$ and $D(2,2)$ form a parallelogram	3																



OSDAV Public School, Kaithal
PT3 Exam (November,2024)
Class : X
Subject :Mathematics

SET B

Time: 1 hr 20 min.

M.M. : 30

General Instructions:-

All questions are compulsory.

Q.No.	Questions	Marks														
Q1	The midpoint of the line segment joining the points(3,-10) and (1,4) (a) (-4,-6) (b) (2,3) (c) (-2,-3) (d) (2,-3)	1														
Q2	The median class of the following data is <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 15%;">Class Interval</td> <td style="width: 15%;">Below 140</td> <td style="width: 15%;">Below 145</td> <td style="width: 15%;">Below 150</td> <td style="width: 15%;">Below 155</td> <td style="width: 15%;">Below 160</td> <td style="width: 15%;">Below 165</td> </tr> <tr> <td>Frequency</td> <td>4</td> <td>11</td> <td>29</td> <td>40</td> <td>46</td> <td>51</td> </tr> </table> (a) 140-145 (b) 145-150 (c)150-155 (d) 155-160o	Class Interval	Below 140	Below 145	Below 150	Below 155	Below 160	Below 165	Frequency	4	11	29	40	46	51	1
Class Interval	Below 140	Below 145	Below 150	Below 155	Below 160	Below 165										
Frequency	4	11	29	40	46	51										
Q3	If the radius of a circle is 3.5cm,then the perimeter of semi circle is (a) 10cm (b) 15cm (c)18cm (d) 20cm	1														
Q4	If the circumference of a circle is 22cm ,then the area of the circle is: (a) 38.5cm ² (b) 48.5cm ² (c) 170cm ² (d) 154cm ²	1														
Q5	Assertion: The points (5,-2) ,(6,4) (7,-2)form an isosceles triangle Reason : The points (1,5) ,(2,3) and(-2,-11) are Collinear a) Both Assertion and Reason are true and reason is correct explanation for the assertion b) Both Assertion and Reason are true but reason is not correct explanation for assertion. c) Assertion is correct but reason is false. d) Assertion is false but reason is true.	1														
Q6	Find the mode of the following frequency distribution. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 15%;">Marks</td> <td style="width: 15%;">30-40</td> <td style="width: 15%;">40-50</td> <td style="width: 15%;">50-60</td> <td style="width: 15%;">60-70</td> <td style="width: 15%;">70-80</td> <td style="width: 15%;">80-90</td> </tr> <tr> <td>No.of students</td> <td>4</td> <td>3</td> <td>8</td> <td>11</td> <td>6</td> <td>2</td> </tr> </table>	Marks	30-40	40-50	50-60	60-70	70-80	80-90	No.of students	4	3	8	11	6	2	2
Marks	30-40	40-50	50-60	60-70	70-80	80-90										
No.of students	4	3	8	11	6	2										
Q7	Find the value of x for which ,the distance between the points P(x,4) and Q(9,10) is 10 units?	2														
Q8	If(-2,1) ,(a,0) ,(4,b) and (1,2) are the vertices of a parallelogram taken in order, find a and b.	2														
Q9	Find the area of the quadrant of a circle of radius 21cm.	2														
Q10	The length of the minute hand of a clock is 3.5 cm. Find the area swept by minute hand in 20 minute.	2														
Q11	A chord AB of a circle of a radius 14 cm makes an angle of 90°at the centre of the circle . Find (i) area of major sector (ii) area of minor segment	3														

Q12	Find the mean of the following data						3	
Class interval	100-120	120-140	140-160	160-180	180-200			
Frequency	12	14	8	6	10			
Q13	Find the ratio in which the x-axis divides the line segment joining the points (3,-3) and (-2,7). Also, find the coordinates of the point of division.						3	
Q14	If the median of the distribution given below is 28.5, find the value of x and y.							3
Class interval	0-10	10-20	20-30	30-40	40-50	50-60	Total	
Frequency	5	x	20	15	y	5	60	
Q15	Show that A(2,4), B(-2,3), C(-1,-1) and D(3,0) form a square						3	

Set A.

Class X (~~Answer Key~~)
Subject Maths)

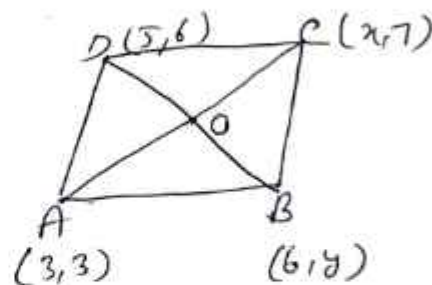
Marking Scheme

- Q1 (c) (-4, 2) (1)
 Q2 (b) 40-60 (1)
 Q3 (b) (12.5 cm) (1)
 Q4 d (154 cm²) (1)
 Q5 (a) (1)

- Q6 Modal class 30-40 $\frac{1}{2}$
 $R=10$ $l=30$, $f_1=45$ $f_0=35$ $f_2=25$
 $\text{mode} = 30 + \left(\frac{45-35}{90-35-25} \times 10 \right)$ $\frac{1}{2}$
 $= 30 + \left(\frac{10}{34} \times 10 \right) = 30 + 3.33$ $\frac{1}{2}$
 $= 33.33$ $\frac{1}{2}$

- Q7 $AP = BP$ $\frac{1}{2}$
 $\sqrt{(1-x)^2 + (4-y)^2} = \sqrt{(1+x)^2 + (2-y)^2}$ $\frac{1}{2}$
 $\sqrt{1+x^2-2x+16+y^2-8y} = \sqrt{1+x^2+2x+4+y^2-4y}$ $\frac{1}{2}$
 $12 = 4x + 4y$ $\frac{1}{2}$
 $3 = x + y$ $\frac{1}{2}$

- Q8 Since Diagonals of
 rhgm bisect each
 other



So Midpt of AC = Mid pt. of BD

$$\left(\frac{x+3}{2}, \frac{7+3}{2} \right) = \left(\frac{6+5}{2}, \frac{y+6}{2} \right)$$

$$x+3=11$$

$$x=8$$

$$7+3 = y+6$$

$$10 = y+6$$

$$y=4$$

$$x=8, y=4$$

$\frac{1}{2}$

$\frac{1}{2}$

$\frac{1}{2}$

$\frac{1}{2}$

Q(9) area of minor sector = $\frac{\pi r^2 \theta}{360}$ $\frac{1}{2}$

$$= \frac{22}{7} \times \frac{10 \times 10 \times 90}{360}$$

$$= \frac{550}{7} \text{ cm}^2$$

Q(10) angle made by minute hand in 30 minutes = $6 \times 30 = 180$ $\frac{1}{2}$

area of sector = $\frac{\pi r^2 \theta}{360}$ $\frac{1}{2}$

$$= \frac{22}{7} \times \frac{180}{360} \times 14 \times 14$$

$$= 308 \text{ cm}^2$$

Q(11) Angle in major ~~segment~~ sector = $360 - 60 = 300$ $\frac{1}{2}$

(i) area of major sector = $\frac{\pi r^2 (360 - \theta)}{360}$ $\frac{1}{2}$

$$= \frac{22}{7} \times \frac{15 \times 15 \times 300}{360}$$

$$= \frac{4125}{7} \text{ or } 589.28$$

(ii) area of minor sector = $\frac{22}{7} \times \frac{15 \times 15 \times 60}{360}$ $\frac{1}{2}$

$$= \frac{825}{7}$$

area of $\Delta = \frac{\sqrt{3}}{4} r^2 = \frac{\sqrt{3}}{4} \times 15 \times 15$ $\frac{1}{2}$

$$= \frac{225\sqrt{3}}{4}$$

area of minor segment $\frac{1}{2}$

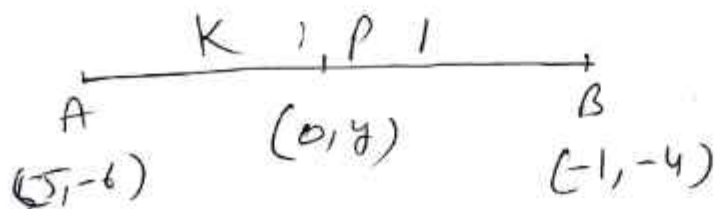
$$= \frac{825}{7} - \frac{225\sqrt{3}}{4}$$

Q12

C.I	f_i	x_i	$f_i x_i$
100-150	4	125	500
150-200	5	175	875
200-250	12	225	2700
250-300	2	275	550
300-350	2	325	650
	<u>25</u>		<u>5275</u>

$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i} = \frac{5275}{25} = 211$$

Q13



$$\left(\frac{-K+5}{K+1}, \frac{-4K-6}{K+1} \right) = \text{Coordinate of P}$$

$$\frac{-K+5}{K+1} = 0 \Rightarrow -K+5=0$$

$$+K=5 \quad \text{Ratio: } 5:1$$

$$K=5$$

$$\left(\frac{-5+5}{5+1}, \frac{-20-6}{5+1} \right) = \left(0, -\frac{13}{3} \right)$$

Q14

C.I	f	cf
0-10	5	5
10-20	x	$5+x$
20-30	20	$25+x$
30-40	15	$40+x$
40-50	y	$40+x+y$
50-60	5	$45+x+y$
Total	60	

$$45+x+y=60$$

$$x+y=15$$

Correct Table - 1

1/2

$$\text{Median} = hf \left(\frac{\frac{N}{2} - C.F.}{f} \times h \right)$$

$$= \frac{25-x}{2} \times 17 = 8.5$$

$$= 25-x = 17$$

$$-x = 17-25$$

$$-x = -8$$

$$x = 8$$

Q15) By using distance formula.

$$AB = \sqrt{18} = 3\sqrt{2} \quad CD = \sqrt{18} = 3\sqrt{2}$$

$$BC = \sqrt{10} \quad AD = \sqrt{10}$$

$$AC = 2 \quad BD = \sqrt{52}$$

Opposite sides are equal, diagonals
not equal So ABCD is a
||gm.

1

$\frac{1}{2}$

$2\frac{1}{2}$

$\frac{1}{2}$

Set B

- Q1 (d) (2, -3) (1)
- Q2 145-150 (b) (1)
- Q3 18 (c) (1)
- Q4 38.5 (a) (1)
- Q5 (c) (1)
- Q6 Modal class - 60-70
 $l = 60, f_1 = 11, f_0 = 8, f_2 = 6, h = 10$
 Mode = $60 + \left(\frac{11-8}{22-8-6} \times 10 \right)$
 $= 60 + \left(\frac{3}{8} \times 10 \right) = 60 + \frac{30}{8}$
 $= 60 + 3.7 = 63.7$ $\frac{1}{2}$
- Q7 $PQ = 10 \Rightarrow \sqrt{(9-x)^2 + (10-4)^2} = 10$
 $\Rightarrow x^2 - 18x + 117 = 100$
 $x^2 - 18x + 17 = 0$
 $(x-1)(x-17) = 0$
 $x = 1, 17$ $\frac{1}{2}$
- Q8 A(-2, 1), B(a, 0), C(4, b), D(1, 2)
 Since diagonal of ||gm bisect each other
 mid pt of AC = mid pt of BD
 $\left(\frac{a+1}{2}, \frac{0+2}{2} \right) = \left(1, \frac{1+b}{2} \right)$
 $\frac{a+1}{2} = 1$ $\frac{2}{2} = \frac{1+b}{2}$
 $a+1 = 2$ $b+1 = 2$
 $a = 2-1 = 1$ $b = 1$ $\frac{1}{2}$

$$\begin{aligned}
 Q(9) \quad \text{Area of quadrant} &= \frac{\pi r^2}{4} \\
 &= \frac{22 \times 21 \times 21}{7 \times 4} \\
 &= \frac{693}{2} = 346.5
 \end{aligned}$$

$$\begin{aligned}
 Q(10) \quad \text{Angle made by minute hand in 1 minute} &= 6^\circ \\
 \text{" " " " " " " " } &= 2^\circ \text{ " " } \\
 &= 6 \times 20 = 120
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of sector} &= \frac{\pi r^2 \theta}{360} \\
 &= \frac{22}{7} \times \frac{35}{10} \times \frac{35}{2} \times \frac{120}{360} \\
 &= \frac{77}{6} = 12.83 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 Q(11) \quad \text{Area of major sector} &= \frac{\pi r^2 (360 - \theta)}{360} \\
 &= \frac{22 \times 14^2 \times 270}{7 \times 360} \\
 &= 154 \times 3 = 462
 \end{aligned}$$

$$\begin{aligned}
 (ii) \quad \text{Area of minor segment} &= \text{area of minor sec.} \\
 &\quad - \text{ar of } \Delta \\
 &= \frac{22}{7} \times 14 \times 14 \times \frac{90}{360} - \frac{1}{2} \times 14 \times 14 \\
 &= 154 - 98 \\
 &= 56 \text{ cm}^2
 \end{aligned}$$

Q (12)

	f_i	x_i	$d_i = x_i - a$	$f_i d_i$
100-120	12	110	-40	-480
120-140	14	130	-20	-280
140-160	8	150	0	0
160-180	6	170	20	120
180-200	10	190	40	400
	<u>50</u>			520

$\left. \begin{matrix} -480 \\ -280 \end{matrix} \right\} -760$
 $\left. \begin{matrix} 120 \\ 400 \end{matrix} \right\} 520$
 $\left. \begin{matrix} -760 \\ 520 \end{matrix} \right\} -240$

$\frac{1}{2}$

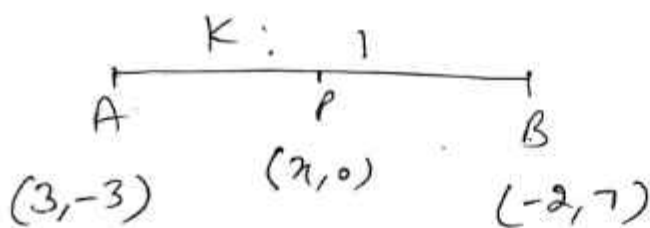
$$\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$$

$$= 150 - \frac{240}{50} = 150 - 4.8 = 145.2$$

$\frac{1}{2}$

1

Q (13)



$$\left(\frac{-2k+3}{k+1}, \frac{7k-3}{k+1} \right) = (x, 0)$$

$$\frac{7k-3}{k+1} = 0 \Rightarrow 7k-3=0$$

$$7k=3$$

$$k = \frac{3}{7} \quad 3:7$$

Coordinate of P $\left(\frac{1}{2}, 0 \right)$

$\frac{1}{2}$

Q (14) Set A

Q (15) $AB = \sqrt{17}$, $BC = \sqrt{17}$, $CD = \sqrt{17}$, $AD = \sqrt{17}$

$$AC = \sqrt{34}, \quad BD = \sqrt{34}$$

So ABCD is a square

$2\frac{1}{2}$

$\frac{1}{2}$