

INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics -Midterm Revision *Worksheet*

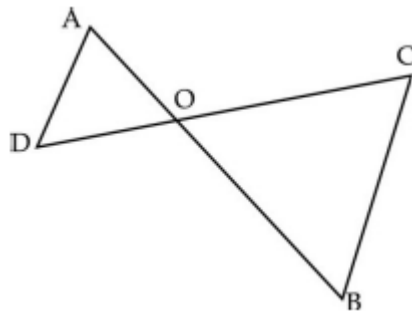
13-09-2020

SECTION A-Fill in the blanks(1 mark questions)

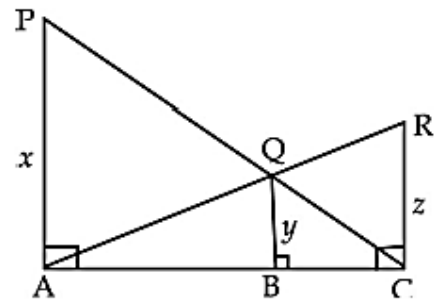
- Q.1. Let $\Delta ABC \sim \Delta DEF$ and their areas be respectively 81 cm^2 and 144 cm^2 . If $EF = 24 \text{ cm}$, then length of side BC is _____ cm.
- Q.2. If -2 is a root of the quadratic equation $3x^2 - 5x + k = 0$, then the value of k is _____.
- Q.3. If two triangles ABC and DEF are similar and $\angle A = 67^\circ$, $\angle E = 63^\circ$, then the measure of $\angle C$ is _____.
- Q.4. ABC is an equilateral triangle of side $2a$, then length of one of its altitude is _____.
- Q.5. $\left(\frac{2+\sqrt{5}}{3}\right)$ is _____ number.

SECTION B (2-marks questions)

- Q.6. Find the HCF and LCM of 306 and 657 and verify that $\text{LCM} \times \text{HCF} = \text{Product of the two numbers}$.
- Q.7. Find the mean number of plants per house from the following data :
- | | | | | | | | |
|------------------|-------|-------|-------|-------|--------|---------|---------|
| Number of plants | 0 - 2 | 2 - 4 | 4 - 6 | 6 - 8 | 8 - 10 | 10 - 12 | 12 - 14 |
| Number of houses | 1 | 2 | 1 | 5 | 6 | 2 | 3 |
- Q.8. Write a quadratic polynomial whose zeroes are $(\sqrt{2} + 1)$ and $(\sqrt{2} - 1)$
- Q.9. In the given figure, $OA \times OB = OC \times OD$. Show that $\angle A = \angle C$ and $\angle B = \angle D$



Q.10.	If one zero of the polynomial $2x^2 + 3x + \lambda$ is $\frac{1}{2}$, find the value of λ and the other zero.																
Q.11.	Write the relationship connecting three measures of central tendencies. Hence find the median of the given data if mode is 24.5 and mean is 29.75.																
Q.12.	In the given figure, $CB \parallel QR$ and $CA \parallel PR$. If $AQ = 12$ cm, $AR = 20$ cm, $PB = CQ = 15$ cm, calculate PC and BR .																
Q.13.	Find the mode of the following distribution :																
	<table border="1"> <tbody> <tr> <td>Class</td> <td>20 – 25</td> <td>25 – 30</td> <td>30 – 35</td> <td>35 – 40</td> <td>40 – 45</td> <td>45 – 50</td> <td>50 – 55</td> </tr> <tr> <td>Frequency</td> <td>10</td> <td>12</td> <td>8</td> <td>20</td> <td>11</td> <td>4</td> <td>5</td> </tr> </tbody> </table>	Class	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50	50 – 55	Frequency	10	12	8	20	11	4	5
Class	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50	50 – 55										
Frequency	10	12	8	20	11	4	5										
Q.14.	A mother is three times as old as her son. After 12 years her age will be twice as that of the age of her son. Find their present ages.																
Q.15.	If α and β are the zeroes of the quadratic polynomial $3x^2 + 8x + 2$, find the value of $\alpha^2 + \beta^2$																
Q.16.	Find the mean of the following distribution:																
	<table border="1"> <tbody> <tr> <td>Class:</td> <td>3-5</td> <td>5-7</td> <td>7-9</td> <td>9-11</td> <td>11-13</td> </tr> <tr> <td>Frequency:</td> <td>5</td> <td>10</td> <td>10</td> <td>7</td> <td>8</td> </tr> </tbody> </table>	Class:	3-5	5-7	7-9	9-11	11-13	Frequency:	5	10	10	7	8				
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Frequency:	5	10	10	7	8												
SECTION C (3-marks questions)																	
Q.17.	The following table gives the daily income of 50 workers. Find the median income of a worker :																
	<table border="1"> <tbody> <tr> <td>Daily income (in Rs.)</td> <td>100 – 120</td> <td>120 – 140</td> <td>140 – 160</td> <td>160 – 180</td> <td>180 – 200</td> </tr> <tr> <td>Number of workers</td> <td>12</td> <td>14</td> <td>8</td> <td>6</td> <td>10</td> </tr> </tbody> </table>	Daily income (in Rs.)	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200	Number of workers	12	14	8	6	10				
Daily income (in Rs.)	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200												
Number of workers	12	14	8	6	10												
Q.18.	Solve for x and y : $152x - 378y = -74$ $-378x + 152y = -604$																
Q.19.	Prove that $\sqrt{3}$ is an irrational number and hence prove that $2 + \sqrt{3}$ is an irrational																
Q.20.	If α and β are the zeroes of the polynomial $3x^2 - 2x - 7$, then find the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$.																

Q.21.	For what value of k will the following pair of linear equations have an infinite number of solutions? $2x + 3y = 2$; $(k + 2)x + (2k + 1)y = 2(k - 1)$														
Q.22.	If 2 is added to the numerator of a fraction, it reduces to $\frac{1}{2}$ and if 1 is subtracted from the denominator it reduces to $\frac{1}{3}$. Find the fraction.														
Q.23.	Solve for x and y : $\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}$; $\frac{3}{x} + \frac{2}{y} = 0$, ($x \neq 0$, $y \neq 0$) and hence find the value of 'a' for which $y = ax - 4$														
Q.24.	QT and RS are medians of a triangle PQR right angled at P. Prove that $4(QT^2 + RS^2) = 5QR^2$														
Q.25.	Find the HCF and LCM of 117, 143, 104 using prime factorisation method. Also show that $HCF \times LCM \neq$ product of three numbers.														
Q.26.	Find the value of p , if the mean of the following distribution is 7.5. <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>Classes</td> <td>2-4</td> <td>4-6</td> <td>6-8</td> <td>8-10</td> <td>10-12</td> <td>12-14</td> </tr> <tr> <td>Frequency (fi)</td> <td>6</td> <td>8</td> <td>15</td> <td>p</td> <td>8</td> <td>4</td> </tr> </tbody> </table>	Classes	2-4	4-6	6-8	8-10	10-12	12-14	Frequency (fi)	6	8	15	p	8	4
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Frequency (fi)	6	8	15	p	8	4									
SECTION D (4-marks questions)															
Q.27.	Solve the following pair of linear equations graphically: $x + 2y = 8$; $2x - 3y = 2$ Also shade the triangular region formed by the lines obtained in the graph and y - axis.														
Q.28.	Divya has pens and pencils which are 60 in number. If she has 25 more pens and 5 less pencils, then the number of pens become three times the number of pencils. Find the original number of each.														
Q.29.	In the given figure, PA, QB and RC are all perpendicular to AC. Prove that $\frac{1}{x} + \frac{1}{z} = \frac{1}{y}$ 														
Q.30.	If the sum of the squares of zeros of the quadratic polynomial $f(x) = x^2 - 8x + k$ is 40, find the value of k .														

Q.31.	Solve the following pair of equations graphically : $3x + y - 5 = 0$; $2x - y - 5 = 0$ Also find the co-ordinates of the points where the lines represented by the above equations meet the y -axis.														
Q.32.	The mean of the following distribution is 62.8. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Class</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>0 - 20</td> <td>5</td> </tr> <tr> <td>20 - 40</td> <td>8</td> </tr> <tr> <td>40 - 60</td> <td>f</td> </tr> <tr> <td>60 - 80</td> <td>12</td> </tr> <tr> <td>80 - 100</td> <td>7</td> </tr> <tr> <td>100 - 120</td> <td>8</td> </tr> </tbody> </table> Find the missing frequency ' f ' and hence find the mode of the above data.	Class	Frequency	0 - 20	5	20 - 40	8	40 - 60	f	60 - 80	12	80 - 100	7	100 - 120	8
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0 - 20	5														
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Q.33.	For what value of a and b the pair of linear equations has coincident lines on the graphical representation. $2x - y = 5$ $(a - 2b)x - (a + b)y = 15$														
Q.34.	Out of a distance of 360 km if 240 km are covered by bus and rest by train it takes 8 hours to complete the journey. However if 120 km are travelled by the bus and rest by train it takes one hour less. What is the speed of the bus and the train.														

Answers

Answers	1	18	2	-22	3.	50°	4	$\sqrt{3} a$
	5	irrational	6	9, 22338	7	8.1	8	$x^2 - 2\sqrt{2} x + 1$
	10	-2, -2	10	C	11	28	12	25 cm, 9 cm
	13	37.86	14.	36yrs, 12yrs	15.	$6\frac{2}{3}$	16.	8.15
	17	138.57	18	$x=2, y=1$	20	$-\frac{46}{21}$	21	$k=4$
	22	$\frac{3}{10}$	23	6, -4, 0	25	13, 10296	26	3
	27	$x=4, y=2$	28	Pens-35 Pencils 25	30	12	31	$x=2, y=1$ $y=5, y=-5$
	32	10, 65.71	33	$a=4, b=-1$	34	60km/hr, 40km/hr		
