



INDIAN SCHOOL AL WADI AL KABIR
WORKSHEET- MATHEMATICS (CBSE Questions)

HOLIDAY HOMEWORK

Class X

Date: 08-06-2015

1.	Prove that $2\sqrt{3} + \sqrt{5}$ is an irrational number. Also check whether $(2\sqrt{3} + \sqrt{5}) \cdot (2\sqrt{3} - \sqrt{5})$ is rational or irrational.																		
2.	The median of the following data is 16. Find the missing frequencies a and b if the total frequency is 70. <table border="1" style="width: 100%; text-align: center;"><tr><td>Class :</td><td>0 - 5</td><td>5 - 10</td><td>10 - 15</td><td>15 - 20</td><td>20 - 25</td><td>25 - 30</td><td>30 - 35</td><td>35 - 40</td></tr><tr><td>Frequency :</td><td>12</td><td>a</td><td>12</td><td>15</td><td>b</td><td>6</td><td>6</td><td>4</td></tr></table>	Class :	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	Frequency :	12	a	12	15	b	6	6	4
Class :	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40											
Frequency :	12	a	12	15	b	6	6	4											
3.	Prove that $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} = \frac{1 + \sin \theta}{\cos \theta}$																		
4.	The following table shows the ages of patients admitted in a hospital during a month. <table border="1" style="width: 100%; text-align: center;"><tr><td>Age in years</td><td>5 - 15</td><td>15 - 25</td><td>25 - 35</td><td>35 - 45</td><td>45 - 55</td><td>55 - 65</td></tr><tr><td>No. of patients</td><td>6</td><td>11</td><td>21</td><td>23</td><td>14</td><td>5</td></tr></table> Convert the above distribution into a "less than type" cumulative frequency distribution and draw its ogive. Also find the median from this ogive.	Age in years	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65	No. of patients	6	11	21	23	14	5				
Age in years	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65													
No. of patients	6	11	21	23	14	5													
5.	Check whether $x^2 + 2x + 2$ is a factor of $x^4 + 3x^3 + 7x^2 + x + 13$ or not.																		
6.	The LCM of 2 numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280, then find the other number.																		
7.	If $\cos(A + B) = 0$ and $\sin(A - B) = \frac{1}{2}$, then find the value of A and B where A and B are acute angles.																		
8.	If the zeroes of the polynomial $x^2 + px + q$ are double in value to the zeroes of $2x^2 - 5x - 3$, find the value of p and q																		
9.	Prove that $\sqrt{5}$ is irrational and hence show that $3 + \sqrt{5}$ is also irrational																		
10.	Evaluate $\frac{\sec 41^\circ \cdot \sin 49^\circ + \cos 29^\circ \cdot \operatorname{cosec} 61^\circ - \frac{2}{\sqrt{3}} (\tan 20^\circ \cdot \tan 60^\circ \cdot \tan 70^\circ)}{3(\sin^2 31^\circ + \sin^2 59^\circ)}$																		

11.	Given that $x - \sqrt{5}$ is a factor of the polynomial $x^3 - 3\sqrt{5}x^2 - 5x + 15\sqrt{5}$, find, all the zeroes of the polynomial.																
12.	<p>Draw “less than ogive” and “more than ogive” for the following distribution and hence find its median.</p> <table border="1"> <thead> <tr> <th>Class</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>20 - 30</td> <td>10</td> </tr> <tr> <td>30 - 40</td> <td>8</td> </tr> <tr> <td>40 - 50</td> <td>12</td> </tr> <tr> <td>50 - 60</td> <td>24</td> </tr> <tr> <td>60 - 70</td> <td>6</td> </tr> <tr> <td>70 - 80</td> <td>25</td> </tr> <tr> <td>80 - 90</td> <td>15</td> </tr> </tbody> </table>	Class	Frequency	20 - 30	10	30 - 40	8	40 - 50	12	50 - 60	24	60 - 70	6	70 - 80	25	80 - 90	15
Class	Frequency																
20 - 30	10																
30 - 40	8																
40 - 50	12																
50 - 60	24																
60 - 70	6																
70 - 80	25																
80 - 90	15																
13.	If the sum of the zeroes of the polynomial $p(x) = (a + 1)x^2 + (2a + 3)x + (3a + 4)$ is -1 , then find the product of its zeroes.																
14.	Find the value of : $\frac{3 \cos 55^\circ}{7 \sin 35^\circ} - \frac{4 \cos 70^\circ \cdot \operatorname{cosec} 20^\circ \cdot \cos 30^\circ}{7(\tan 5^\circ \cdot \tan 25^\circ \cdot \tan 60^\circ \cdot \tan 65^\circ \cdot \tan 85^\circ)}$																
15.	On dividing the polynomial $2x^3 + 4x^2 + 5x + 7$ by a polynomial $g(x)$, the quotient and the remainder were $2x$ and $7 - 5x$ respectively. Find $g(x)$.																
16.	Find the median for the following table which shows the daily wages drawn by 200 workers in a factory.																
	<table border="1"> <thead> <tr> <th>Daily wages (in Rs.)</th> <th>Less than 100</th> <th>Less than 200</th> <th>Less than 300</th> <th>Less than 400</th> <th>Less than 500</th> </tr> </thead> <tbody> <tr> <td>No. of workers</td> <td>40</td> <td>82</td> <td>154</td> <td>184</td> <td>200</td> </tr> </tbody> </table>	Daily wages (in Rs.)	Less than 100	Less than 200	Less than 300	Less than 400	Less than 500	No. of workers	40	82	154	184	200				
Daily wages (in Rs.)	Less than 100	Less than 200	Less than 300	Less than 400	Less than 500												
No. of workers	40	82	154	184	200												
17.	<p>The mean of the data in the following table is 50. Find the missing frequencies f_1 and f_2.</p> <table border="1"> <thead> <tr> <th>Class :</th> <th>10 - 30</th> <th>30 - 50</th> <th>50 - 70</th> <th>70 - 90</th> <th>90 - 110</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Frequency :</td> <td>90</td> <td>f_1</td> <td>30</td> <td>f_2</td> <td>40</td> <td>200</td> </tr> </tbody> </table>	Class :	10 - 30	30 - 50	50 - 70	70 - 90	90 - 110	Total	Frequency :	90	f_1	30	f_2	40	200		
Class :	10 - 30	30 - 50	50 - 70	70 - 90	90 - 110	Total											
Frequency :	90	f_1	30	f_2	40	200											
18.	Find the LCM and HCF of 12, 72 and 120 using prime factorisation. Also show that $\text{HCF} \times \text{LCM} \neq \text{Product of three given numbers}$.																
19.	If $\cos\theta + \sin\theta = p$ and $\sec\theta + \operatorname{cosec}\theta = q$, prove that $q(p^2 - 1) = 2p$																
20.	Find the other zeroes of the polynomial $x^4 - 5x^3 + 2x^2 + 10x - 8$ if it is given that two of its zeroes are $-\sqrt{2}$ and $\sqrt{2}$.																