



INDIAN SCHOOL AL WADI AL KABIR

Class X - Holiday Homework June - 2016

MATHEMATICS

Polynomials & Statistics

1. Find a quadratic polynomial, the sum and product of whose zeroes are respectively -2 and 1

Answer : $p(x) = x^2 + 2x + 1$

2. When $p(x) = x^2 + 7x + 9$ is divided by $g(x)$, we get $(x + 2)$ and -1 as quotient and remainder respectively, find $g(x)$.

Answer: $x + 5$

3. Divide $6x^3 + 2x^2 - 4x + 3$ by $3x^2 - 2x + 1$ and verify the division algorithm.

Answer: Quotient = $2x + 2$; Remainder is $-2x + 1$

4. Following is the age distribution of patients admitted during a month in a hospital. Find the modal age of a patient.

Age in years	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	Total
No. of patients	5	10	20	25	12	18	10	100

Answer : 32.77

5. Find the mean of the following frequency distribution using step - deviation method.

Classes	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	7	12	13	10	8

Answer : 25

6. Draw "less than ogive" for the following distribution. Also find the median from the graph.

Marks	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
Number of students.	3	4	10	8	9	8	12	6

Median : 65

7. Find all the zeroes of the polynomial $4x^4 - 20x^3 + 23x^2 + 5x - 6$ if two of its zeroes are 2 and 3

Answer : All zeroes are $2, 3, -\frac{1}{2}$ and $\frac{1}{2}$

8. The median of the following distribution is 30 . Find the missing frequencies f_1 and f_2 .

Classes	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	Total
Frequency	10	10	f_1	30	f_2	10	100

Answer : 30 & 10

9. If ' m ' and ' n ' are the zeroes of the polynomial $ax^2 - 5x + c$ find the value of ' a ' and ' c ' when $m + n = mn = 10$

Answer : $a = \frac{1}{2}$ & $c = 5$

10. One zero of the polynomial $x^2 + 11x + k$ is -3 , find the value of k and the other zero.

Answer : $k = 24$ & zero -8

11. Find the mean of the following frequency distribution :

Class	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30
Frequency	1	2	2	6	7	2

Answer : 18

12. Median of the data is 52.5 and its mode is 49.5. Using empirical relationship between three measures of central tendency, find its mean.

Answer : 54

13. If α and β are the zeroes of the quadratic polynomial $3x^2 + 8x + 2$, find the value of $\alpha^2 + \beta^2$

Answer : $20/3$

14. The distribution below gives the weights of 30 students of a class. Find the median weight of a student.

Weight (in kg)	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75
Number of students	2	3	8	6	6	3	2

Answer: 56.67kg

15. Find the mean weight (in g) for which the data on cubes is given below.

Weight (in g)	10 - 13	13 - 16	16 - 19	19 - 22	22 - 25	25 - 28	28 - 31
Number of cubes	8	15	27	51	25	54	20

Answer: 22.18

16. The following data gives the information on the observed lifetimes (in hours) of 225 electrical components. Find the modal life time of the components :

Life time (in hrs)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
No. of components	10	35	52	61	38	29

Answer: 65.625

17. Obtain all other zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$ if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$

The zeroes are $x = \sqrt{\frac{5}{3}}, -\sqrt{\frac{5}{3}}, -1, -1$

Answer :

18. Draw a more than ogive for the following distribution and hence find its median.

Class	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90
Frequency	25	15	10	6	24	12	8

Answer : Median 50

19. If α and β are the zeroes of the polynomial $4x^2 - 2x + (k - 4)$ and $\alpha = \frac{1}{\beta}$, find the value of k

Answer : $k = 8$