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**Grade: X MATHEMATICS-WORKSHEET 1**

1. Show that the square of any positive integer is of the form  for some integer m.

2. Find the HCF and LCM of 26 and 91 and verify that

 LCM x HCF = Product of the integers

3. Check whether  can end with the digit 0 for any natural number n

4. Write down the decimal expansion of the rational number  by writing their denominators in the form .

5. Show that the reciprocal is an irrational number.

6. Find the zeroes of the quadratic polynomial and verify the relationship between the zeroes and the coefficients.

7. Divide the polynomial  by  and find the quotient and the remainder. Also verify the division algorithm

8. Obtain all other zeroes of the polynomial , if two of its zeroes are 5 and -2.

9. Verify whether 2, 3 and 1/2 are the zeroes of the polynomial .

10. Find a quadratic polynomial whose zeroes are  and .

11. Find the 9th term from the end (towards the first term) of the A.P 5, 9, 13,...185.

12. For what value of k will k+9, 2k – 1 and 2k + 7 are the consecutive terms of an A.P?

13. How many terms of the A.P 18, 16, 14, ... be taken so that their sum is zero?

14. The 4th term of an A.P is zero. Prove that the 25th term of the A.P is three times its 11th term.

15. Find the 25th term of the A.P 

16. Find the ratio in which y-axis divides the line segment joining the points the points A(5, -6) and B(-1, -4). Also find the coordinates of the point of division.

17. The x coordinate of a point P is twice its y coordinate, if P is equidistant from

 Q (2, -5) and R(-3, 6), find the coordinates of P.

18. Let P and Q be the points of trisection of the line segment joining the points A(2,-2) and B(-7, 4) such that P is nearer to A. Find the coordinates of P and Q.

19. Prove that the points (3,0), (6, 4) and (-1, 3) are the vertices of a right angled isosceles triangle.

20. Find the ratio in which the point(-3, k) divides the line segment joining the points (-5, -4) and (-2, 3). Also find the value of k.

21. Draw two concentric circles of radii 3 cm and 5 cm. Construct a tangent to smaller circle from a point on the larger circle. Also measure its length.

22. Construct a triangle ABC in which BC = 6 cm, AB = 5 cm and

 . Then construct another triangle whose sides are (3/4) times the corresponding sides of a triangle ABC.

23. Cards marked with numbers 3,4,5,... are placed in a box and mixed thoroughly. A card is drawn at random from the box. Find the probability that the selected card bears a perfect square number.

24. A card is drawn at random from a well shuffled pack of 52 cards. Find the probability of getting neither a red card nor a queen.

25. 20 tickets, on which numbers 1 to 20 are written, are mixed thoroughly and then a ticket is drawn at random out of them. Find the probability that the number on the drawn ticket is a multiple of 3 or 7.

26. In a single throw of a pair of different dice, what is the probability of getting (i) a prime number on each die. (ii) a total of 9 or 11?

27. Two different dice are thrown together. Find the probability of (i) getting a number greater than 3 on each die (ii) getting a total of 6 or 7 of the numbers on two dice.

28. Determine the missing frequency x, from the following data:

 Class: 40 – 50 50-60 60-70 70-80 80-90

 f : 5 x 15 12 7

29. The following data gives the information on the life times(in hours) of 150 electrical components. Find the mode.

 Life time: 0-20 20-40 40-60 60-80 80-100

 Frequency: 15 10 35 50 40

30. Find mode, using an empirical relation, when it is given that mean and median are 10.5 and 9.6 respectively.