PRERNA EDUCATION
Sample paper
Mathematics - IX

Time : 3. hours **Maximum Marks: 95**

SECTION – A (2 MARKS)

1. Circumference of the vase of a right circular cone is 88 cm. If height of the cone is 10 cm then, find its volume.

2. ABCD is a trapezium with AB || CD, E is the mid – point of side AD. A line through E parallel to AB meets BC in F. Show that F is the mid – point of BC.

3. For a Mathematics test given to 15 students, the following marks (out of 100) are recorded : 41, 39, 48, 52, 46, 62, 54, 40, 96, 60, 52, 30, 52, 94, 56. Find mean and median.
4. In a class there are x boys and y girls, a student is selected at random, find the probability of selecting: (a) a girl (b) both boy and girl.
5. ABCD is a ||gram AE ⊥DC and CF⊥ AD, if AB = 8 cm and CF = 10 cm. Find AD, if AE = 8 cm.
6. Class marks of a distribution are 35, 40, 45, 50, 55, 60, 65. Determine the class size and class limit.

SECTION – B (3 MARKS)

7. In triangle ABC, the median BE and CF of a triangle intersect at G. Prove that area of ΔGBC = area of quadrilateral AFGE.
8. Construct a ΔABC in which BC = 5.6 cm, AC – AB = 1.6 cm and ∠ B = 45.
9. The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white – washing its curved surface at the rate of Rs 210 per 100 m^2.
10. The following data are given in ascending order 20, 25, 28, 30, x, x + 2, 40, 45, 50, 52 if their median is 36 then find the value of x. If the number 35 is replaced by 53 then find its new median.
11. When 5 times the larger of the two numbers is divided by the smaller, the quotient and the remainder are 2 and 9. Form the linear equation in two variables for above and give its two solutions.
12. If ABCD is a trapezium in which AB||CD and AD = BC, prove that ∠A = ∠B.

13. In a frequency distribution, the mid-value of a class is 20 and the width of the class is 8. Find lower limit of the class.
14. A class room is 10m long, 6.4m wide and 5m high. If each student be given 1.6m2 of the floor area, how many students can be accommodated in the room? How many cubic metres of air would each student get?
15. Find three solutions of equation 2x + 3(y – 1) = 13. How many solutions this equations has?.
16. The diagonals of a parallelogram ABCD intersect at point O. Through O, a line is drawn to intersect AD at P and BC at Q. Show that PQ divides the parallelogram into two parts of equal areas.

SECTION – C (5 Marks)

17. AB and AC are two chords of a circle of radius r such that AB = 2 AC. If p and q are the distances of AB and AC from the centre. Prove that $4q^2 = p^2 + 3r^2$.
18. The taxi fare in a city is as follow: for the first kilometer, the fare is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and the total fare as Rs y, write a linear equation for this information and draw its graph.

19. Prove that parallelogram on the same base and between the same parallels are equal in areas.

20. A building has 8 pillars each having diameter 50 cm and height 3.5 m. Find the cost of painting their curved surfaces at the rate of Rs 12.50 per square metre.

21. In a parallelogram ABCD, E and F are the mid – points of side AB and CD. Prove that the line segments AF and CE trisect the diagonal BD.

22. Draw the line x = 4, y = 2 and x = y, on the same graph paper and then identify what type of figure obtained? Also write the point of vertices of this figure formed.

23. Prove that the sum of either pair of opposite angles of a cyclic quadrilateral is 180.

24. Construct a triangle ABC, if its perimeter is 10.4 cm and base angles 45 and 120.

25. A semi circular sheet of metal of diameter 28 cm is bent to form an open conical cup. Find the capacity of the cup.

26. The mean of the following distribution is 50. Find the value of a.

C.I (km/h)	10	30	50	70	100
Frequency	17	5a + 3	32	7a - 11	19