PRERNA EDUCATION

Sample Paper – 2019
Class – IX
Subject – MATHEMATICS

Time: 3 hours **Maximum Marks: 80**

General Instruction:

1. **All** questions are **compulsory.**
2. The question paper consists of **34** questions divided into four sections A**, B, C** and **D**. **Section- A** comprises of**10** questions of **1mark** each, **Section- B** comprises of **8** questions of **2 marks** each, **Section -C** comprises of **10** questions of **3** marks each and **Section- D** comprises of **6** questions of **4 marks** each.
3. Question numbers **1** to **10** in **Section- A** are multiple choice questions where you are to select **one correct** option out of the given hour.
4. There is no overall choice. However, internal choice has been provided in **1** question of **two marks, 4** questions of **three marks** each and **2** questions of **four** marks each. You have to attempt only one of the alternatives in all such question.
5. Use of calculator is **not** permitted.
6. An additional **15** minutes time has been allotted to read this question paper only.

SECTION –A

Question number 1 to 10 carry 1 mark each.

1. For what value of *k*, x=2 and y=-1 is a solution of x+3y-k=0:

(A) -1 (B) 2 (C) -2 (D) 3

2.The mean of prime numbers between 20 and 30 is:

(A) 21 (B) 26 (C) 25 (D) 27

3. If the diagonals AC and BD of a quadrilateral ABCD bisect each other, then ABCD is a:

(A) parallelogram (B) rectangle (C) rhombus (D) trapezium

4. The height of a right circular cylinder with lateral surface area 792 sq cm is 21. The diameter of the base is:

(A) 3cm (B) 6cm (C) 12cm (D) 24cm

5. The diagonals of a parallelogram PQRS intersect at O. If $\angle$ QOR= 90^0 and $\angle$ QSR=50^0 , then $\angle$ ORS is

(A) 90^0 (B) 40^0 (C) 70^0 (D) 50^0

6. Which of the following is a linear equation in one variable:

(A) 2x+3y=0 (B) x^2 =5x+3 (C) 5x=y^2+3 (D) x+5=6

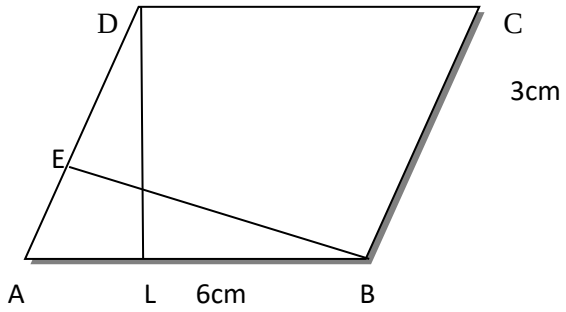
7. D and E are the points on the sides AB and AC respectively of triangle ABC such that DE||BC. If area of $\triangle$ DBC =15cm2 then area $\triangle$ EBC is:

(A) $30cm^2$ (B) $7.5cm^2$ (C) $15cm^2$ (D) $20cm^2$

8. AD is a diameter of a circle and AB is chord. If AD= 34 cm and AB =30 cm, the distance of AB from the centre of the circle is:

(A) 17cm (B) 15cm (C) 4cm (D)8cm

9. In the given figure, if ABCD is parallelogram then length of BE is: {AB=6cm, BC=3cm, DL=4cm and DL⊥ AB and BE⊥ AD}



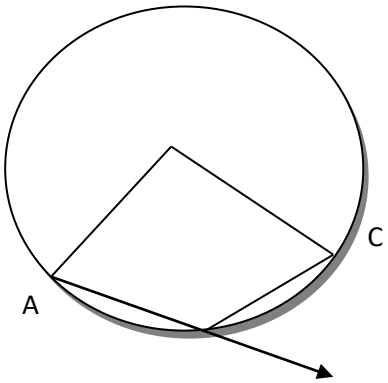
(A) 24cm (B) 26cm (C) 6cm (D) 8cm

10. Three angles of a quadrilateral are 70^0, 120^0 and 65^0. Then fourth angle of the quadrilateral is:
(A) 95^0 (B) 75^0 (C) 105^0 (D) 90^0

SECTION- B

Question numbers 11 to 18 carry 2 marks each.

11. A river 3m deep and 40 m wide is flowing at the rate of 2km/hour. How much water will fall into the sea in one minute?
12. Two circles intersect at two points A and B. AD and AC are diameters to the two circles. Prove that B Lies on the line segments DC.
13. Find the coordinates of the points where the line 2x-y=3 meets both the axis.
14. O is the centre of the circle as shown in the figure. Find ∠ CBD.{ O is centre, ∠ AOC=100^0}



15. Following table shows the marks obtained by 30 students in a class test:

Marks Obtained	70	58	60	52	65	75	68
Number of Students	3	5	4	7	6	2	3

Find the probability that a student secures

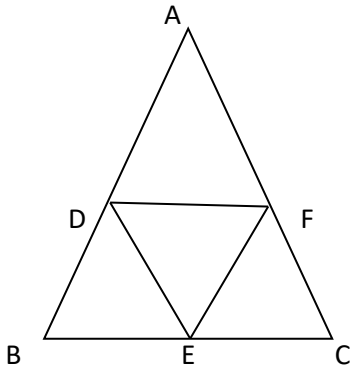
(a) 60 marks
(b) Less than 60 marks.

16. Show that diagonals of a square are equal and bisect each other at right angles.
17. Curved surface area of a cone of radius 4cm is 20π cm^2 . Find total surface area of the same cone in terms of π.

OR

The length, breadth and height of a room are 5m, 4m and 3m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of Rs 7.50 per sq m.

18. In triangle ABC, D, E and F are mid points of sides AB, BC and CA respectively. Show that $\triangle$ ABC is divided into four congruent triangles by joining D, E and F.



SECTION –C

Question numbers 19 to 28 carry 3 marks each.

19. The radius of a spherical balloon increases from 7 cm to 14cm as air is pumped into it. Find the ratio of surface areas of the balloon in two cases.

OR

The volume of a right circular cylinder is 3850 cubic cm. Find its height if it's diameter is 14cm.

20. The median of the following observations arranged in arranged in ascending order is 27. Find x. 13, 15, 17, 21, x+2, x+4, 32, 37, 41, and 48.
21. Obtain the mean of the following data:

Variable (x_i)	4	6	8	10	12
Frequency (f_i)	4	8	14	11	3

22. XY is a line parallel to side BC of a triangle ABC. If BE||AC and CF||AB meet XY at E and F respectively. Show that area ABE=area ACF.
23. The food charges in a hostel are as follows:

    For the first day, the charges are Rs.100 and for the subsequent days it is Rs 50 per day. Taking the number of days as x and total charges as Rs y, write a linear equation for this information and draw its graph.

24. Two parallel liners *l* and *m* are intersected by a transversal *p*. Show that the quadrilateral formed by the bisectors of interior angles as a rectangle.
25. Sum of the digits of a two digit number is 14. If we add 18 to the original number, the digits interchange their places. Write two equations for these two statements.

26. Construct a triangle PQR with base PQ=8.4cm, ∠ P=45^0 and PR-OR=2.8cm

OR

Construct a right triangle whose base is 12 cm and sum of its hypotenuse and other side is 18cm.

27. The radius and height of a cone are in the ratio 4:3. The area of its base 154$cm^{2.}$ find its curved surface area.

28. The following table gives the distribution of students of two sections according to the marks obtained by them.

Section A		**Section B**	
Marks	**Frequency**	**Marks**	**Frequency**
0-10	2	0-10	5
10-20	12	10-20	11
20-30	18	20-30	15
30-40	13	30-40	12
40-50	5	40-50	7

Represent the marks of the students of both the sections on the same graph by two frequency polygons.

SECTION- D

Question numbers 29 to 34 carry 4 marks each.

29. The two intersecting chords of a circle make equal angles with the diameter passing through their point of intersection; prove that the chords are equal.
30. The distribution of weight (in kgs) of 100people is given below.

Weight in kg	**Frequency**
40-50	13
45-50	25
50-55	28
55-60	15
60-65	12
65-70	5
70-75	2

Construct a histogram for the above distribution.

31. The pillars of a temple are cylindrically shaped. If each pillar has a circular base of radius 20 cm and height 10m, how much concrete mixture would be required to build 14 such pillars?

OR

A wall of length 10 m was to be building across an open ground. The height of the wall is 4m and thickness of the wall is 24 cm. If this wall is to be built up with bricks whose dimensions are 24cmX12cmX8cm, how many bricks would be required?

32. Prove that parallelograms on the same base and between the same parallels are equal in area.
33. Draw the graphs of each of the equation-2y-3=0 and 4x+3y-1=0 on the same graph.
34. The side AB of a parallelogram ABCD is produced to any point P. A line through A and parallel to CP meets CB produced at Q and then parallelogram PBQR is completed. Show that area ABCD=area PBQR.

OR

PQRS and ABRS are parallelograms and X is any point on side BR.

Show that

(i) Area PQRS=area ABRS
(ii) Area AXS =1/2 area PQRS