Roll No. ....

KENDRIYA VIDYALAYA SANGATHAN, PATNA REGION

SUMMATIVE ASSESSMENT – 2, 2016-17

CLASS – IX

MATHEMATICS

4928

Sl. No. ....

TIME – 3 HOURS]

[MAX. MARKS – 90

General Instructions :

(i) Attempt all the questions.

(ii) The question paper consist of 31 questions. First 28 questions are divided into 4 sections A, B, C and D.

SECTION – A comprises of 4 questions of 1 mark each.

SECTION – B comprises of 6 questions of 2 marks each.

SECTION – C comprises of 8 questions of 3 marks each.

SECTION – D comprises of 10 questions of 4 marks each.

(iii) Question number 29 to 31 are related to OTBA.

(iv) Question number 1 to 4 in Section – A are very short answer questions.

(v) The question paper does not have any choice in any of the questions.

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(vi)   Use of calculator is not permitted.

(vii)   An additional 15 minutes time has been allotted to read this question paper, during this period student will not write answer in their answer book.

SECTION – A

Question number 1 to 4 carry 1 mark each.

1.   Find the volume of right circular cone with radius 3.5 cm and height 12 cm.

2.   In parallelogram ABCD $\angle A = (2x + 5)°$ and $\angle B = (3x - 5)°$ find the value of x.

3.   In a throw of a dice, find the probability of getting an even number.

4.   What is the relationship between chord of a circle and a perpendicular to it from the center ?

SECTION – B

Question number 5 to 10 carry 2 marks each.

5.   If the point $(2k - 3, k + 2)$ lies on the graph of the equation $2x + 3y + 15 = 0$, find the value of k.

6.   Ten observation 6, 14, 15, 17, $x + 1$, $2x - 13$, 30, 32, 34, 43 are written in an ascending order. The median of the data is 24. Find the value of x.

7. Find the volume of a sphere whose surface area is 154 cm².

8. Two cubes each of 10 cm edge are joined end to end. Find the surface area of the resulting cuboid.

9. The angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

10. The area of trapezium is 39 cm². The distance between its parallel side is 6 cm. If one of the parallel side is 5 cm, then find the other side.

SECTION – C

Question number 11 to 18 carry 3 marks each.

11. Two dice are thrown simultaneously 500 times. Each time the sum of two numbers appearing on their tops is noted and recorded as given table in the following table :

Sum	Frequency
2	14
3	30
4	42
5	55
6	72

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7	75
8	70
9	53
10	46
11	28
12	15

If the dice are thrown once more, what is the probability of getting a sum ?

(i)   More than 10.

(ii)   Less than or equal to 5.

(iii) Between 8 and 12.

12. The diameter of a roller is 84 cm and its length is 120 cm, it takes 500 complete revolution to move once over the level of a playground. Find the area of the playground in m².

13. Draw the graph of the equation 3x + 4y = 12 and find the co-ordinates of the points of intersection of the equation with the co-ordinates axes.

14. The lateral surface area of a cube is 576 cm2. Find its volume and the total surface area.

15. In countries like USA and Canada temperature is measured in Fahrenheit (F) whereas in countries like India It measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius : $F = \left(\dfrac{9}{5}\right)C + 32$

    (a) If the temperature is 0° C, what is the temperature in Fahrenheit ?

    (b) If the temperature is 95° F, what is the temperature in Celsius ?

    (c) Is there a temperature which is numerically the same in both Fahrenheit and Celsius ? If yes find it.

16. A patient in a hospital is given soup daily in a cylindrical bowl of diameter 7 cm. If the bowl with soup to a height 4cm, how much soup needs to be prepared to serve 250 patients ?

17. In fig. ∠ADC = 130° and chord BC = chord BE. Find ∠CBE.
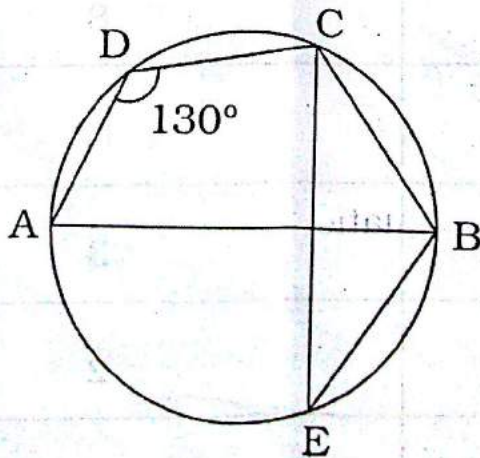
18.   Construct a triangle having given the base = 5 cm, sum of two sides equal

       to 7 cm and one of the angles at the base = 60°.

SECTION – D

Question number 19 to 28 carry 4 marks each.

19.   Solve for x :

$$\frac{3x+2}{7} + \frac{4(x+1)}{5} = \frac{2}{3}(2x+1)$$

20.   Draw a frequency polygon for the following distribution :

Marks obtained	No. of Student
0-10	7
10-20	10
20-30	6
30-40	8
40-50	12
50-60	3
60-70	2
70-80	2

21. 1000 families with 2 children were selected randomly, and the following data were recorded :

Number of boys in a family	0	1	2
Number of families	140	560	300

If a family is chosen at Random, find the probability that it has :

(i)   No boy

(ii) One Boy

(iii) At least one boy

(iv) At most one boy

22. The marks of 30 students of a class obtained in a test out of 75 are given below :

42, 21, 50, 37, 42, 37, 38, 42, 49, 52, 38, 53, 57, 47, 29,

59, 61, 35, 17, 17, 39, 44, 42, 39, 14, 7, 27, 19, 54, 51

Form a frequency table & a cumulative table, with equal class interval one of them being 0 to 10.

23. It costs Rs. 2200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate of Rs. 20/m², find

    (a) Inner curved surface area of the vessel

    (b) Radius of base

    (c) Capacity of the vessel

24. Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and

    XY + YZ + ZX = 11cm

25. Prove that the angle subtended by an arc at the center is double the angle subtended by any point on the remaining part of the circle.

26. Some children planted 5 trees in the colony park and 2 plants each in their houses. Taking the number of children as x and the total trees planted as y, write a linear equation in two variable.

    (a) How many plants would be planted by 7 children ?

    (b) What value do such children possess ?

27. The length of two parallel chords of a circle are 6 cm and 8 cm. If the smaller chord is at a distance of 4 cm from the centre, what is the distance of other chord from the centre ?

28. In a parallelogram ABCD, two points P and Q are taken on its diagonal BD such that DP = BQ. Prove that APCQ is a parallelogram.
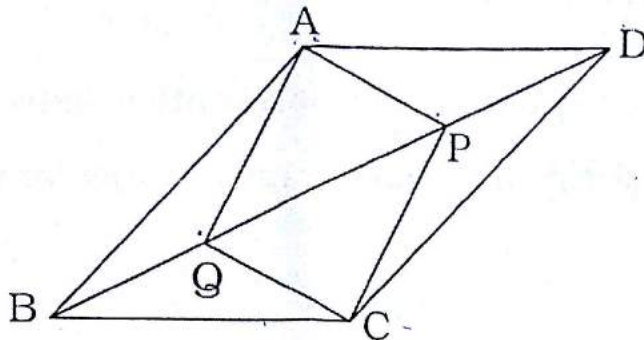
OTBA

Attempt any one theme.

Theme 1: Solving mystery of messed up fields

29. Listening to Rehman's statement, Roshini concluded that his farm might be a quadrilateral. Do you agree with her opinion ? Justify.

   If the angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

30. Listening to Neckchand's statement, Roshni conclude that his farm might be a square or rectangle in shape. Do you agree with her opinion ? Justify. Prove that the diagonals of the rectangle bisect each other.

31. Listening to Krishna's statement Roshni concluded that his farm might be trapezium. Do you agree with her opinion ? Justify.

   If ABCD is a trapezium in which AB parallel to CD and AD = BC. Show that :

   (a) $\angle A = \angle B$ (b) $\angle C = \angle D$ (c) $\triangle ABC \cong \triangle BAD$

OR

Theme 2 : Quadrilateral in Architecture, WAH TAJ :

29. What properties of Taj Mahal make it seventh wonder of the World ? What is the total area of the Taj and in how many rectangular parts, The Taj complex divided ?

30. In this theme, the Taj Mahal complex was divided in how much section ? Mention all.

31. The front of a building is as shown in the figure :

The rectangular part of the building is desired to be painted in four colours, each covering equal area. The colour to be used as red, yellow, green and blue and each part painted should be triangular in shape. Suggest how it can be done ? What is the area of each part coloured ?

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