



**KENDRIYA VIDYALAYA SANGATHAN**  
**RANCHI REGION**



**SESSION ENDING EXAMINATION 2018 - 19**

**CLASS - IX**

**MARKS : 80**

**SUBJECT : MATHEMATICS**

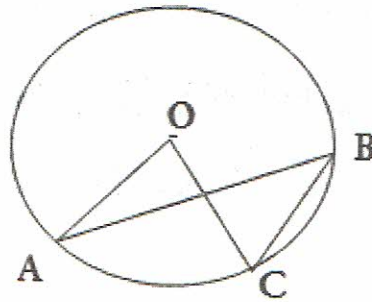
**TIME : 3 HOURS**

**GENERAL INSTRUCTIONS:**

1. All the questions are compulsory.
2. The question paper consists of the section-A,B,C and D.
  - (i) Section A contains 6 questions of 1 mark each
  - (ii) Section B contains 6 questions of 2 marks each
  - (iii) Section C contains 10 question of 3marks each
  - (iv) Section D contains 8 questions of 4 mark each

**SECTION-A**

1. Find the value of  $\left(\frac{16}{81}\right)^{\frac{3}{4}}$
2. How many zeroes does a cubic polynomial has?
3. In which quadrant does the point  $(-4,3)$  lie?
4. How many lines can pass through a given point?
5. In figure 1., if  $\angle ABC = 30^\circ$  , then find the  $\angle AOC$ .



6. In tossing a coin 100 times head appears 56 times. What is the probability of getting head for the coin?

**SECTION-B**

7. Find the value of  $k$  if  $y+3$  is a factor of  $3y^2 + ky + 6$ . (22)
8. If  $x = 0$  and  $y = a$  is a solution of equation  $5x - 3y = 0$ , find the value of  $a$ .
9. Write any two solution of  $3x + 2y = 9$ .
10. If  $AC = BD$ , then prove that  $AB = CD$ . (2)



11. Find the volume of a right circular cone with radius 3.5cm and height 12cm
12. Find the mean of first six odd numbers. (2)

**SECTION-C**

13. Rationalise the denominator of

$$\frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$$

14. Expand:

a)  $(x-4y+z)^2$

b)  $(2a-3b)^3$

15. Draw the graph  $x + y = 4$ .
16. Plot the points (2,3), (3,2) and (1,-5) on the graph and check they are collinear.
17. Prove that the sum of the angles of a triangle is 180. 2
18. Prove that median of a triangle divides it into two triangles of equal areas.
19. Prove that equal chords of a circle subtend equal angles at the centre.
20. Construct a triangle ABC in which  $BC = 7\text{cm}$ ,  $\angle B = 75^\circ$  and  $AB+AC=13\text{cm}$ .
21. A sphere and a right circular cylinder of the same radius have equal volumes. By what percentage does the diameter of the cylinder exceeds its height.
22. 1500 families with 2 children were selected randomly and the the following data were recorded.

|                 |     |     |     |
|-----------------|-----|-----|-----|
| No. of girls    | 2   | 1   | 0   |
| No. of families | 475 | 814 | 221 |

Compute the probability of family, chosen at random , having

- (i) 2girls
- (ii) 1 girl
- (iii) No girl

**SECTION-D**

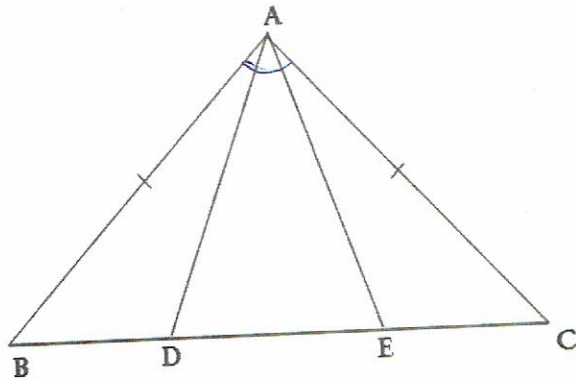
4

23. Represent  $\sqrt{3}$  on the number line and write the steps of construction.

24. Factorise:

$$X^3+13x^2+32x+20$$

25. In figure 3., ABC is an isosceles triangle with side  $AB=AC$ , D and E are points on BC such that  $BE=CD$ .



Show that  $AD=AE$ .

26. D, E and F respectively the mid points of the sides BC, CA and AB of a triangle ABC. Show that

i) BDEF is a parallelogram

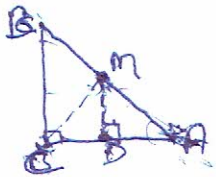
ii)  $\text{ar}(\text{DEF}) = \frac{1}{4} \text{ar}(\text{ABC})$

iii)  $\text{ar}(\text{BDEF}) = \frac{1}{2} \text{ar}(\text{ABC})$

27. ABC is a triangle right angled at C. A line through the mid point M of hypotenuse AB and parallel to BC intersects AC at D. Show that

i) D is the mid point of AC

ii) MD perpendicular to AC



iii)  $CM = MA = \frac{1}{2}AB$

28. A field in the shape of trapezium, its parallel sides are 25m and 10m and non-parallel sides are 14m and 13m. Find the area of the field.
29. A solid cube of side 12cm is cut into 8 cubes of equal volumes. What will be the side of new cube? Also find the ratio of total surface area of new cube to the original cube. (1)
30. Find the mean salary of 80 workers of a factory from the following table:

|                   |      |      |      |      |      |       |
|-------------------|------|------|------|------|------|-------|
| Salary<br>(in Rs) | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 |
| No. of workers    | 22   | 18   | 15   | 10   | 8    | 7     |

**OR**

In a city, the following weekly instruction are made in a study on cost of living index. Draw a histogram and frequency polygon for the data.

|                |         |         |         |         |         |         |
|----------------|---------|---------|---------|---------|---------|---------|
| Cost of living | 120-130 | 130-140 | 140-150 | 150-160 | 160-170 | 170-180 |
| No. of week    | 8       | 12      | 4       | 16      | 8       | 4       |