Roll No. ..... Code : S8MA903

KENDRIYA VIDYALAYA SANGATHAN, PATNA REGION

SESSION ENDING EXAMINATION- 2018-19

CLASS – IX

Sl. No. 2775

MATHEMATICS

Time - 3 Hrs.] **[Maximum Marks - 80**

***General Instructions*:**

(i) **All questions are compulsory.**

(ii) **The question paper consists of 30 questions divided into 4 sections A B, C and D.**

(iii) **Section A comprises of 6 questions of 1 mark each,**

Section B comprises of 6 questions of 2 marks each,

Section C comprises of 10 questions of 3 marks each,

And Section D comprises of 8 questions of 4 marks each.

SECTION - A (1 × 6 = 6)

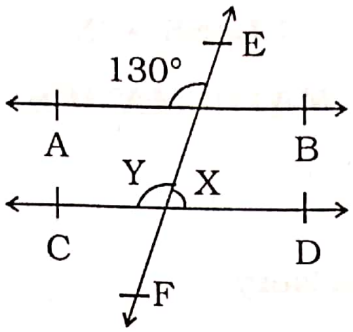
1. In which quadrant does the point (2, 4) lie ?
2. If $p(x) = x^2 + 2x + 3$, find p (0).
3. What is the range in which probability of an event lie ?
4. How many solutions a linear equation in two variables $2x + 3y = 6$ has ?
5. Expand : $(x + 5y - 3z)^2$
6. In which class-interval out of class interval 5-10, 10-15, the number 10 will be included ?

SECTION - B (2 × 6 = 12)

7. Represent $\sqrt{3}$ on number line.
8. If AD = CB then prove that AC = BD.

Turn Over

9. Two lines AB||CD and EF is a transversal. Then find the value of x and y.



10. Find the value of k if (x-1) is a factor of $p(x) = x^2 + x + k$.

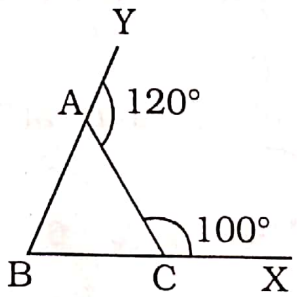
11. Rationalise the denominator $\frac{3}{3-\sqrt{5}}$.

12. Factorise the polynomial

$27 + 125a^3 + 135a + 225a^2$

SECTION - C (3 × 10 = 30)

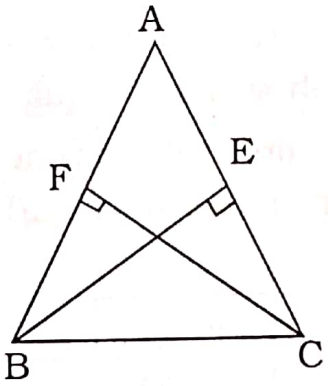
13. In the given figure find the value of $\angle B$.



14. Draw the graph of linear equation $3 = 2x + y$.

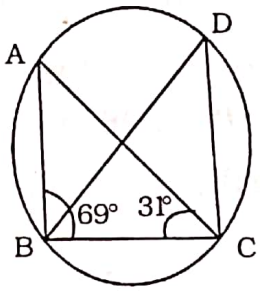
15. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540 cm. Find its area.

16. ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively. Show that these altitudes are equal.



17. Factorise :- $x^3 + 13x^2 + 32x + 20$.

18. In the figure $\angle ABC = 69°$, $\angle ACB = 31°$ find $\angle BDC$.



19. Prove that parallelograms on the same base and between same parallels are equal in area.

20. The diameter of a roller in 84 cm and its length is 120 cm. It takes 500 complete revolution to move once cover to level a playground. Find the area of the playground in m^2.

21. Without finding the cubes, factorise $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$.

22. A village having a population of 4000 requires 150 litres of water per head per day. It has a tank measuring 20 m × 15 m × 6 m. For how many days will the water of this tank last ?

SECTION - D (4 × 8 = 32)

23. State and prove Mid point theorem.

24. Construct a triangle ABC in which BC= 7cm, $\angle B = 75°$ and AB + AC = 12.5 cm.

25. A right angle triangle ABC with the side 5 cm, 12cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained.

26. If $x + y + z = 0$, show that $x^3 + y^3 + z^3 = 3xyz$.

27. ABCD is a rectangle and P, Q, R and S are mid points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.

28. A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million of a certain city. The data obtained for 30 days is as follows : -

0.03	0.08	0.08	0.09	0.04	0.17
0.16	0.05	0.02	0.06	0.18	0.20
0.11	0.08	0.05	0.13	0.22	0.07
0.08	0.01	0.12	0.06	0.09	0.18
0.11	0.07	0.10	0.07	0.01	0.04

(i) Make a grouped frequency distribution table for this data with class intervals as 0.00-0.04, 0.04-0.08 and so on.

(ii) For how many days, was the concentration of Sulphut dioxide more than 0.11 parts per million.

29. Find the value of a and b, if $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}} = a + \sqrt{15}\,b$

30. Draw Histogram and frequency polygon for the following data:

Daily Pocket expenses in Rs.	**No. of students**
0-4	15
4-8	25
8-12	10
12-16	6
16-20	4

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