SAMPLE PAPER 12

CLASS 9

General Instructions:

1. All questions are compulsory.
2. The question paper consists of 31 questions divided into five sections A, B, C, D and E. 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 and Section – D comprises of 10 questions of 4 marks each. Section – E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.
3. There is no overall choice.
4. Use of calculator is not permitted.

SECTION – A

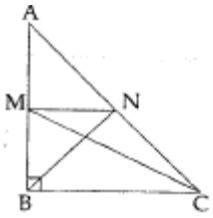
Question number 1 to 4 carry one mark each.

1. A fraction becomes $\frac{1}{4}$ when 2 is subtracted from the numerator and 3 is added to the denominator. Represent this situation as a linear equation in two variables.
2. Find k, if the graph of $2x + ky = 5$, passes through (1, 4).
3. If the angles of a quadrilateral are in the ratio of 4 : 3 : 4 : 7, find the largest angle of the quadrilateral.
4. Calculate the edge of the cube if its volume is 1331 cm^3.

SECTION – B

Question numbers 5 to 10 carry two marks each.

5. ΔABC is a right triangle, right angled at B. M and N are respectively the mid – points of sides AB and AC. Show that ar (ΔBNC) = ar (ΔBMC).



6. Using ruler and compass, construct ∠XYZ = 105^0.

7. In the figure, ABCD is a parallelogram and X and Y are mid – points of AB and CD respectively. Show that AD || XY.

8. How much water in litres can a hemispherical tank of radius 15 cm hold?
9. 1500 families with 2 children were selected randomly, and the following data were recorded:

Number of girls in a family	2	1	0
Number of families	475	814	211

Compute the probability of a family, chosen at random, having

a. 2 girls b. 1 girl c. no girl

Also check whether the sum of these probabilities is 1.

10. Eleven bags of wheat flour contain the following weights of flour (in kg): 4.97, 5.05, 5.08, 5.03, 5.00, 5.06, 5.08, 5.07, 5.04, 5.00, 4.98. Find the probability that any of these bags chosen at random contains more than 5 kg flour.

SECTION – C

Question numbers 11 to 18 carry three marks each.

11. Draw the graphs of $x = 2$ and $y = 5$ in the same Cartesian plane and identify the figure formed by these graphs with x and y axis.
12. Find the value of a, if the point (3, 4) lies on the graph of $ax - 4y + 10 = 0$. Also find the coordinates of the point on the graph for which $y = 1$.
13. In a triangle ABC, E is the mid – point of median AD. Show that ar (BED) = $\frac{1}{4}$ ar (ABC).
14. Prove that a cyclic parallelogram is a rectangle.
15. Construct any obtuse angle. Divide it into four equal parts, using ruler and compass.
16. ABCD is a quadrilateral, in which P, Q, R and S are mid – points of the sides AB, BC, CD and DA respectively. AC is a diagonal. Show that:

a. SR || AC and SR = $\frac{1}{2}$ AC

b. PQ = SR

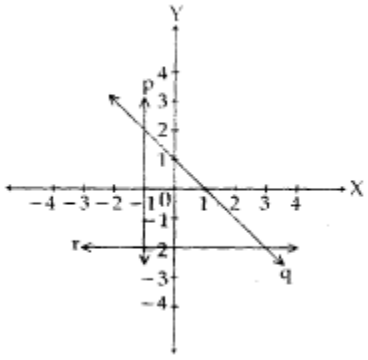
c. PQRS is a parallelogram.

17. The lengths 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 the other chord from the centre?
18. If the total surface area of solid sphere is 98.56 cm^2, find the radius of the sphere.

SECTION – D

Question numbers 19 to 28 carry four marks each.

19. Anisha scored 30 marks in a test, getting 4 marks for each right answer and losing 1 mark for each wrong answer. If number of attempted right questions by her is x and that attempted incorrectly is y, then write a linear equation which satisfies this data. Also draw the graph for the equation.
20. Write the equations of the lines p and r in the following graph:



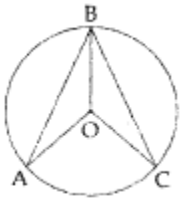
A student answered equation of line q as $x + y = 1$. Did he answer correctly? Also, find the area enclosed between lines p, q and r.

21. P is a point in the interior of a parallelogram ABCD. Show that:

a. ar (APB) + ar (PCD) = $\frac{1}{2}$ ar (ABCD)

b. ar (APD) + ar (PBC) = ar (APB) + ar (PCD)

22. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point in alternate segment.



23. Construct a ΔXYZ in which XY = 8 cm, ∠X = 75^0 and YZ – ZX = 4 cm.
24. ABCD is a quadrilateral in which the bisectors of ∠A and ∠C meet DC produced at Y and BA produced at X respectively. Prove that: ∠X + ∠Y = $\frac{1}{2}$ (∠A + ∠C)
25. Shivansh has a gift placed in a cuboidal box of dimensions 80 cm, 40 cm and 20 cm. He wants to cover the box nicely to present it to his friend on his birthday. Instead of using coloured paper he decided to use square paper of old magazines of side 40 cm.

a. How many square sheets of magazine paper are required?

b. What value is depicted by this act?

26. The length and breadth of a hall are in the ratio 4 : 3 and its height is 550 cm. The cost of decorating its walls (including doors and windows) on Diwali at Rs. 6.60 per square metres is Rs. 5082. Find the length and breadth of the room.

27. A hollow cylindrical iron pipe is 21 m long. Its outer and inner diameter are 10 cm and 6 cm respectively. Find the volume of the iron used in making the pipe. Also find the outer surface area of the pipe.
28. The marks scored by some students in an examination are given in the form of a frequency distribution table:

Marks	600 -640	640 – 680	680 – 720	720 – 760	760 – 800	800 – 840	840 – 880
No. of students	16	45	156	284	172	59	18

If a child is selected at random, find the probability that the child:

a. Scored at least 800 marks?
b. Scored at most 680 marks?
c. Has marks between 680 and 880?

SECTION – E

Theme: Empower to Learn

29. Study the figure 3 and answer the following questions:

a. Give difference in percentage of students who were benefitted in Political Science and Economics?
b. Find the median by taking the percentage of benefitted students as ungrouped data.

30. What type of graphical representation is used in figure 1? How is it different from Bar graph?
31. In figure 1, number of students in age group 05 to 08 are 0.4 million i.e, 4 lakhs. Similarly take number of students from all age groups (in total 7) and find the mean and mode.