SAMPLE PAPER 19

CLASS 9

General Instructions:

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 8 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 10 questions of 4 marks each.
3. Question numbers 1 to 8 in Section – A are multiple choice questions where you are to select one correct option out of the given four.
4. There is no overall choice. However, internal choices have been provided in 1 question of two marks, 3 questions of three marks each and 2 questions of four marks each. You have to attempt only one of the alternatives in all such questions.
5. Use of calculator is not permitted.

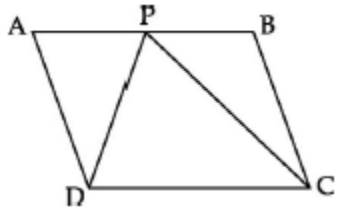
Section – A

Question numbers 1 to 8 carry one mark each. For each questions, four alternative choices have been provided of which only one is correct. You have to select the correct choice.

1. If $x = -2$ and $y = -1$ is a solution of the equation $-3x + y + 5p = 0$, the value of p is:

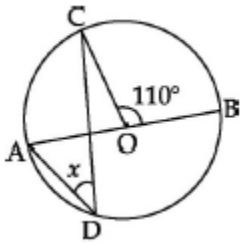
a. – 2 b. 2 c. 1 d. - 1

2. In the figure, ABCD is a parallelogram, then $\frac{ar(||gm\ ABCD)}{ar(\Delta DPC)}$ is:



a. 1 : 2 b. 2 : 1 c. 1 : 3 d. 3 : 1

3. The value of x n the figure is:



a. 35^0 b. 45^0 c. 55^0 d. 30^0

4. Which of the following equation represents a line parallel to $y - axis$?

a. $2y = 5x$ b. $2y = 5$ c. $2x = 5$ d. $2x + 3y = 5$

5. The mean of first 5 prime numbers is:

a. $\frac{18}{5}$ b. 14 c. 9 d. $\frac{28}{5}$

6. In a cylinder, if radius is halved and height is doubled, the volume will be:

a. Same b. doubled c. halved d. four times

7. The percentage of marks obtained by a student in mathematics in five monthly unit tests are given below:

Unit Test	I	II	III	IV	V
Percentage of marks obtained	69	71	73	68	74

Probability that the student gets more than 70% marks in the next unit is:

a. 0 b. $\frac{2}{5}$ c. $\frac{3}{5}$ d. $\frac{4}{5}$

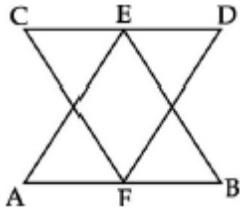
8. The ratio of the volumes of two right circular cones of the same height and the base radii in the ratio 5 : 7 is:

a. 25 : 49 b. 5 : 7 c. 125 : 343 d. 25 : 16

Section – B

Question numbers 9 to 14 carry two marks each.

9. In the figure, AB || CD. E and F are the points on the sides CD and AB respectively. If $ar(\Delta ABE) = ar(DCF)$, then prove that AB = DC.



OR

Diagonals AC and BD of a trapezium ABCD with AB || DC intersect each other at O. Prove that $ar(\Delta AOD) = ar(\Delta BOC)$.

10. Find the volume of the largest right circular cone that can be placed in a hollow cube of edge 14 cm.
11. A die is rolled 300 times and following outcomes are recorded:

Outcome	1	2	3	4	5	6
Frequency	42	60	55	53	60	30

Find the probability of getting a number more than 4.

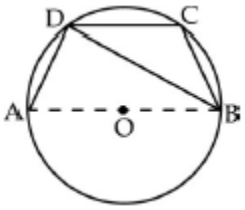
12. To know the opinion of the students about a subject survey of 200 students was conducted. The data is recorded as follows:

Opinion	Number of students
Like	135
Dislike	65

Find the probability that a student chosen at random

a. Likes the subject
b. Does not like it.

13. In the figure, if $\angle ADC = 128^0$, and $\angle DBC = 32^0$, find $\angle DCB$.

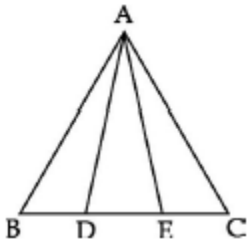


14. The median of a data arranged in ascending order 9, 14, 15, 20, x + 1, x + 3, 31, 36, 44, 51 is 25. Find the value of 3x + 3.

Section – C

Question numbers 15 to 24 carry three marks each.

15. Using graph, verify that point (2, 6) lies on the graph of $3x - 2y + 6 = 0$.
16. In the figure, BD = DE = BC. Prove that $ar(\Delta ABD) = \frac{1}{2}\, ar(\Delta ADC)$.



OR

If the diagonals of a parallelogram are equal, show that it is a rectangle.

17. Construct an angle of $22\frac{1}{2}^0$ with the help of ruler and compass.

18. How many square metres of a metal sheet is required to make a closed cylindrical tank of height 1.4 m and base diameter 2 m? $\left(Take\ \pi = \frac{22}{7}\right)$

OR

The area of the base of a right circular cone is 28.26 m^2. If its height is 4 m, find its curved surface area. $(Use\ \pi = 3.14)$

19. Construct a frequency distribution table with equal class intervals, from the following data of the weekly wages (in rupees) of 25 labourers working in a factory, taking one of the class intervals as 460 – 500 (500 not included): 600, 640, 638, 612, 584, 508, 440, 536, 515, 449, 480, 561, 556, 632, 611, 430, 607, 605, 637, 425, 540, 537, 485, 625, 580.

20. Solve the equation $4y - 2 = 8 - y$ and represent the solution on:

a. A number line.

b. The Cartesian plane.

21. A cube of largest volume is cut out from a sphere of radius $4\sqrt{3}$ cm. Find the volume of the cube. $\left(Use\ \pi = \frac{22}{7}\right)$

OR

A right triangle PQR with sides 3 cm, 4 cm and 5 cm is revolved about the side of length 4 cm. Find the volume of the solid so generated. $(Use\ \pi = 3.14)$

22. A, B, C and D are the mid – points of sides PQ, PS, SR and RQ respectively of a quadrilateral PQRS. Show that ABCD is a parallelogram.

23. Prove that a diagonal of a parallelogram divides it into two congruent triangles.

24. A die is thrown 1000 times with the following frequencies for the outcome 1, 2, 3, 4, 5 and 6 as given below:

Outcome	1	2	3	4	5	6

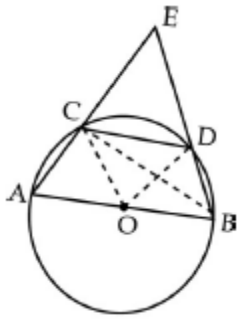
Frequency	175	125	250	150	100	200

If the same die is thrown once more, find the probability of outcome 2, 4 and 6.

Section – D

Question numbers 25 to 34 carry four marks each.

25. Two parallel lines l and m are intersected by a transversal p. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.
OR
Prove that in a triangle, the line segment joining the mid – points of any two sides is parallel to the third side and is half of it.
26. Construct a triangle ABC whose perimeter is 12 cm, $\angle B = 60^0$ and $\angle C = 45^0$. Measure the sides of the triangle.
27. Draw graphs of $3x - 2y = 1$ and $2x + y = -4$ and write the coordinates of the point where the graphs intersect.
28. A wall of length 10 m was to be built across an open ground. The height of the wall is 4 m and thickness of the wall is 24 cm. If this wall is to be built up with bricks whose dimensions are 24 cm × 12 cm × 8 cm, how many bricks would be required?
29. Prove that the angle subtended by an arc at the centre of a circle is double the angle subtended by it at any point on the remaining part of the circle.
30. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on the diagonal BD. Show that AP = CQ.
31. Give the geometric representation of $2x + 8 = 0$ as an equation:
a. In one variable
b. In two variables.
32. In figure AB is a diameter of the circle. CD is a chord equal to the radius of the circle. AC and BD, when produced, intersect at a point E. Prove that $\angle AEB = 60^0$.



33. Find total surface area and volume of a hemisphere of radius $\sqrt{3}\,a$ units.

34. Draw a frequency polygon of the following data:

Marks	Number of students
30 – 40	11
40 – 50	7
50 – 60	9
60 – 70	20
70 – 80	22
80 – 90	2
90 – 100	3

OR

Draw a histogram to represent the data

Marks	0 – 20	20 – 60	60 – 80	80 – 100
Number of students	5	20	16	8