SAMPLE PAPER

Class-IX (2018–19)

Mathematics

Time allowed: 3 Hours Max. Marks: 80

General Instructions:

(i) All questions are compulsory.

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

(iii)Section A contains 6 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D contains 8 questions of 4 marks each.

(iv) Use of calculators is not permitted.

**SECTION-A**

1. Is zero a rational number ? Give support to support your answer ?
2. Rationalise the denominator of : .$\frac{1}{2+\sqrt{3}}$ .
3. What is the degree of a linear polynomial ?
4. In which quadrant does a point lie whose abscissa is positive and ordinate is negative?
5. A coin is tossed 1000 times with the following frequencies:

 Head : 455, Tail : 545

 Compute the probability for getting a tail
 6. What is the ratio of area of a triangle and a parallelogram both on the same base and

 between the same parallels?

**SECTION-B**

 7. Express 0.2$\overbar{35}$ in the form of p/q.

 8. Find the remainder when the polynomial $x^{3}-3x^{2}+3x-1$ is divided by x+1.

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

1. The sum of two angles of a triangle is 1400 and their difference is 200. Find the angles.
2. Fifty seeds were selected at random from each of 5 bags of seeds, and

were kept under standardised conditions favourable to germination. After 20 days, the

number of seeds which had germinated in each collection were counted and recorded

as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Bag** | 1 | 2 | 3 | 4 | 5 |
| **No. of seeds germinated** | 40 | 48 | 42 | 39 | 41 |

 What is the probability of germination of

 (i) more than 40 seeds in a bag?

 (ii) more that 35 seeds in a bag?

 12. If a line intersects two concentric circles with centre O at A, B, C and

D, prove that AB = CD .



**SECTION-C**

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

 OR

Find the area of Quadrilateral ABCD in which AB= 3 cm, BC = 4 cm, CD = 4 cm, DA = 5 cm and AC = 5 cm.

14. Factorize : $64m^{3}-343n^{3}$

OR

Find the value of k if (x – 1) is a factor of p(x)

 If p(x) = kx2 – 3x + k

15. Solve the equation : $3x+5=2x-1$ and represents the solution(s) on

(i) the number line (ii) the Cartesian plane

16.If a point C lies between two points A and B such that AC = BC, then prove that AC = $\frac{1}{2} $AB. Explain by drawing the figure.

17. (i) Plot each of the points A(5,3), B(5,-2), C(-3,-2) and D(-3,3).

What are the coordinates of the point where AD cuts y-axis and CD cuts x-axis?

18.ABC and DBC are two isosceles triangles on the same base BC. Show that∠ ABD= ∠ACD.

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

OR

In the adjoining figure, PQRS and ABRS are

parallelograms and X is any point on side BR.

Show that

(i) ar(PQRS) = ar(ABRS)

(ii) ar(∆AXS) = $ \frac{1}{2} $ar(PQRS).

20...ABCD is a quadrilateral in which P, Q, R and S are mid points of the sides AB, BC, CD and DA respectively. Show that PQRS is a parallelogram.

OR

Show that the line segments joining the mid points of opposite sides of quadrilateral bisect each other.

21.The following observations have been arranged in ascending order. If the median of

the data is 63, find the value of *x*.

29, 32, 48, 50, *x*, *x* + 2, 72, 78, 84, 95

22.ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If ∠DBC = 70°, ∠BAC is 30°, find ∠BCD. Further, if AB = BC, find ∠ECD.

**SECTION-D**

23.The inner diameter of a circular well is 3.5m, It is 10m deep, find

 (i) its inner curved surface area

 (ii) the cost of plastering this curved surface at the rate of Rs 40 per m2.

 OR

What length of tarpaulin 3m wide will be required to make conical tent of height 8m and base radius 6m ?Assuming that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm.(Use $π=3.14)$

24. A kite is in the shape of a square with a diagonal 32cm and an isosceles triangle of base 8 cm and sides 6 cm each is to be made with three different shades as shown in figure.How much paper of each shade has been used in it.



25. The taxi fare in a city is as follows :For the first kilometre, the fare is Rs 8 and for the subsequent distance ,it is Rs 5 per kilometre,.Taking the distance covered as x km and total fare as Rs y,Write a linear equation for this information and draw its graph.

26. If $\frac{\sqrt{2}-\sqrt{3}}{3\sqrt{2}+2\sqrt{3}}=a+b\sqrt{6 }$where a,b are rational numbers, fins the value of a and b.

27. Factorise :$ x^{3}-23x^{2}+142x-120$ using remainder theorem.

 OR

1. Expand : $\left(5x-2y-z\right)^{2}$ [2]
2. Evaluate using suitable identity: $(15)^{3}-\left(8\right)^{3}-(7)^{3}$ [2]

28.In the figure, if PQ PS, PQ || SR, ∠SQR=280 and ∠QRT=650, then find the values of x and y.



OR

In the given figure, PR> PQ and PS bisects ∠QPR. Prove that ∠PSR > ∠ PSQ.

29.Construct a triangle XYZ in which ∠Y = 30°, ∠Z = 90° and XY + YZ + ZX = 11 cm

30.The runs scored by two teams A and B on the first 60 balls in a cricket match are given

below:

|  |  |  |
| --- | --- | --- |
| **Number of balls** | **Team-A** | **Team-B** |
| 1-6 | 2 | 5 |
| 7-12 | 1 | 6 |
| 13-18 | 8 | 2 |
| 19-24 | 9 | 10 |
| 25-30 | 4 | 5 |
| 31-36 | 5 | 6 |
| 37-42 | 6 | 3 |
| 43-48 | 10 | 4 |
| 49-54 | 6 | 8 |
| 55-60 | 2 | 10 |

Represent the data of both the teams on the same graph by frequency polygons.