**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. Rationalise the denominator **.**
2. Find the remainder when x3+3x2+3x+1 is divided by x$-$2 .
3. In a group of 70 persons there are 15 boys , 20 girls, 30 men and rest women. Find the probability that a selected person is a women.
4. Curved surface area of a right circular cylinder is 4.4 m2 . If the radius of base of cylinder is 0,7 m , find its height . ($use π$ = 22/7 )
5. Write the name of the point where the two axis intersect in the Cartesian plane.
6. From the figure ,find the ∠AOB if ∠AMB=350. M

 O

 B

 **Section B**

1. If a line intersects two concentric circles (circles with the same centre) with centre O at A, B, C and D, prove that AB = CD..
2. Find the value of k, if x – 1 is a factor of p(x) = x2 + x + k.
3. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of thequadrilateral.
4. Show that the angles of an equilateral triangle are 600 each.
5. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter

is 540 m. Find its area.

1. In a mathematics test given to 15 students, the following marks (out of 100) are recorded.Find the mean of this data.

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

 **Section C**

1. Visualise 4.587 on the number line , using successive magnification .
2. In which quadrant or on which axis do each of the points (**–** 2, 4), (3, **–** 1), ( 1, 0),(1, 2) ,(0,$-5) $and (**–** 3, **–** 5) lie?
3. Write three solutions of equation 2x+3y =11.
4. If a point C lies between two points A and B such that AC = BC , then prove that

AC = ½ AB. Explain by drawing the figure.

1. Prove that the sum of three angles of a triangle is 1800 .
2. In Fig. , POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that

 ∠ROS = $\frac{1}{2}$(∠QOS – ∠ POS).

1. A tyre manufacturing company kept a record of the distance covered before a tyre needed to be replaced. The table shows the results of 1000 cases.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Distance | Less than 4000 | 4000 to 9000 | 9001 to 14000 | More than 14000 |
| Frequency | 20 | 210 | 325 | 445 |

If you buy a tyre of this company, what is the probability that :

1. it will need to be replaced before it has covered 4000 km?
2. (ii) it will last more than 9000 km?
3. (iii) it will need to be replaced after it has covered somewhere between 4000 km and 14000 km?
4. Factorise 6x2 + 17x + 5 by splitting the middle term .
5. The paint in a certain container is sufficient to paint an area equal to 9.375 m2. Howmany bricks of dimensions 22.5 cm × 10 cm × 7.5 cm can be painted out of thiscontainer?
6. A rhombus shaped field has green grass for 18 cows to graze. If each side of the rhombus is 30 m and its longer diagonal is 48 m, how much area of grassfield will each cow be getting?

 **Section D**

1. Represent √5 on number line . Give justification.
2. (a) . Expand (2a -3b )3.

(b) Without actually calculating the cubes, find the value of the following:

 (-12)3 + (7)3 + (5 )3.

1. Prove that the parallelograms on the same base and between same parallels are equal in area.
2. ABCD is a quadrilateral in which P,Q,R and S are mid points of sides AB,BC,CD and DA. AC is a diagonal . Show that

 (i) SR $∥$ AC and SR = ½ AC.

 (ii) PQ = SR

(iii) PQRS is a parallelogram.

1. Solve the equation 2*x* + 1 = *x* – 3, and represent the solution(s) on

 (i) the number line,

(ii) the Cartesian plane.

1. A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square metre, find the

 (i) inside surface area of the dome,

 (ii) volume of the air inside the dome. (use $π=22/7)$

1. Construct a triangle PQR in which QR = 7cm, ∠Q = 60° and PQ+ PR = 11 cm.
2. : In a city, the weekly observations made in a study on the cost of living index are given in the following table.Draw a frequency polygon for the data above (without constructing a histogram).



