

CLASS X SAMPLE PAPER MATHEMATICS

Section-A

1. n^{th} term of a sequence is given by $4n^2 + 2$. Is this an A.P.?
2. What is the probability that two friends have birthday on the same date?
3. What is the distance between the points $(-4,0)$ and $(5,0)$?
4. Find the area enclosed by two concentric circles of radius 4 cm and 3 cm ($\pi = 3.14$)

Section-B

5. Comment on the nature of the roots of the equation $4x^2 - 12x - 7 = 0$.
6. How many terms are there in the sequence 60, 56, 52, -56.
7. Find the area enclosed by two concentric sectors of radii 7 cm and 3.5 cm and central angle 45°
8. Diameter of a solid hemisphere is 14 cm. Find its surface area.
9. A circle is inscribed in a right triangle. If the sides making right angle measure 5 cm and 12 cm, find the radius of the circle.
10. Prove that a circle inscribed in an isosceles triangle bisects the base at the point of contact.

Section-C

11. A person saves Rs.100 in a month. There after he increases his savings every month by Rs.50. In how many months his savings would total to Rs. 29750?
12. Solve for 'x': $(x^2 + 5x)(x^2 + 5x - 3) - 18 = 0$
13. Prove that tangents drawn to a circle from an external point are equal.
14. Draw line $AB = 8\text{cm}$ and divide it in the ratio 3 : 5.
15. A quadrilateral ABCD circumscribes a circle. Prove that $AB + DC = AD + BC$.
16. A bag contains 15 balls 5 blue and rest red. By adding some more blue balls the probability of drawing blue balls becomes $\frac{3}{2}$ times that of red ball. Find the number of blue balls added.

17. If P(x,y) is equidistant from the points (5,2) and (4,-5) find a relation between 'x' and 'y'.
18. Find the coordinates of the point that divides the line joining (3,7) and (7,5) in the ratio 3: 5.
19. A spherical ball of diameter 7 cm is melted and drawn into a wire of diameter 3.5 mm. Find the length of the wire.
20. A bucket is in the form of a frustum of a cone whose radii of top and bottom are 27 cm and 18 cm respectively. If the bucket is 40 cm high find the curved surface area of the bucket.

Section-D

21. A circus tent is cylindrical up to a height of 5 m and conical above it. If the diameter of the base is 35 m and slant height of conical part is 63 m find the cost of canvas used to make the tent at Rs. 30/m².
22. Construct a triangle ABC given AB= 4 cm, BC = 5 cm and AC = 6 cm and construct a triangle AB'C similar to it with scale factor 4/5. Write steps of construction.
23. Find the area of a quadrilateral whose vertices are A(4,6), B(-5,5), C(-6,-3) and D(2,-5).
24. A flag staff on top of a building is 'p' metres high. From the point on the ground the angles of elevations of bottom and top of the flagstaff were found to be α and β respectively. Show that the height of the building $h = \frac{ptan\alpha}{tan\beta - tan\alpha}$.
25. Angle of depression of a boat sailing towards a light house 100 m high was found to be 30°. After 8 minutes the angle of depression changes to 60°. In how many more minutes the boat would reach the bottom of the light house?
26. Fifty cards are numbered 1 –50. One card is drawn at random. What is the probability that the drawn card bears a (i) Prime number, (ii) Odd number, (iii) An even multiple of 7 (iv) A divisor of 72 on it?
27. Four semi circles have been drawn using the sides of a square -of side 14 cm- touching each other. Find the area of the region between the semicircles.
28. Find the sum of all 3-digit numbers not divisible by 9.
29. A plane left 45 minutes late due to bad weather. In order to reach its destination 4200 km away on time its speed had to be increased by 100 km/h. Find the original speed of the plane.

30. A philanthropist wanted to donate Rs. 8000 equally among the inmates of a destitute home. Had there been 10 children less each would have got Rs.40 more. Find the number of inmates in the destitute home. What value does the person reflect?
31. A rectangular park measures 80 m x 60 m. At each corner there is a circular flower bed of radius 10.5 m. Find the remaining area of the park and the cost of maintaining the flower beds at Rs. 45/m².