CBSE Sample Papers for Class 10
SA2 Maths Solved 2016 (Set 3)

Roll No.

- Please check that this question paper contains 5 printed pages .
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 31 questions.
- Please write down the Serial Number of the question before attempting it.
- 15 minutes time has been allotted to read this question paper.

MATHEMATICS

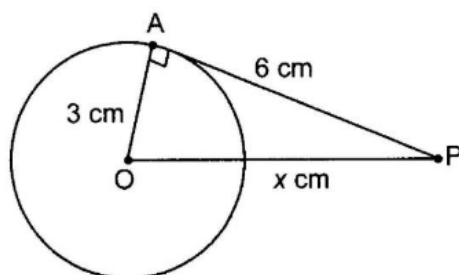Time allowed : 3 hours

Maximum Marks : 90

General Instructions:

(i) All questions are compulsory.

(ii) The question paper consists of **31** questions divided into four sections — **A, B, C** and D.

(iii) Section **A** contains **4** questions of **1** mark each, Section **B** contains **6** questions of **2** marks each, Section **C** contains **10** questions of **3** marks each and Section **D** contains **11** questions of **4** marks each.

(iv) In question on construction, the drawing should he neat and exactly as per the given measurements.

(v) Use of calculators is not permitted.

Section A

1. Determine the value of k for which the indicated value of x is a solution: $x^2 + kx - 4 = 0$; $x = -4$.

2. Find the sum of the following AP: 2, 7, 12, ... upto 10 terms.

3. Find the ratio in which the joining of points (- 3, 10) and (6, - 8) is divided   by point   (- 1, 6).

4. Find the area of a quadrant of a circle whose circumference is 22 cm.

Section B

5. Find discriminant of the following quadratic equation and examine the nature of real roots (if they exist): $7y^2 + 4y + 5 = 0$.

6. Find the sum of the first 17 terms of the AP whose nth term is given by $t_n = 7 - 4n$.

7. In figure, O is the centre of the circle, radius of the circle is 3 cm and PA is a tangent drawn to the circle from point P. If OP = x cm and AP = 6 cm, then find the value of x.

8. 2000 tickets of a lottery were sold and there are 8 prizes on these tickets. Your friend has purchased one lottery ticket. What is the probability that your friend wins a prize?

9. The radii of two circles are 19 cm and 9 cm respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.

10. The diameter of a solid metallic sphere is 16 cm. The sphere is melted and recast into 8 equal solid spherical balls. Determine the radius of the balls.

Section C

11. The sum of an integer and its reciprocal is 145/12 find the integer.

12. Find the 12th term from the end in the AP 56, 63, 70, ... ,329.

13. Solve for x : x - 1/x = 3, x not equal to zero

14. Construct a triangle of sides 4 cm, 5 cm and 6 cm and then a triangle similar to it, whose sides are — of the corresponding sides of the first triangle.

15. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. Find the probability that the marble taken out will be (i) red (ii) white (iii)not green.

16. A piggy bank contains hundred 50 p coins, fifty Rs 1 coins, twenty Rs 2 coins and ten Rs 5 coins. If it is equally likely that one of the coins will fall out when the piggy bank is turned upside down, find the probability that the coin (i)will be a 50 p coin (ii)will not be a Rs 5 coin.

17. The three vertices of a parallelogram taken in order are (-1, 0), (3, 1) and (2, 2) respectively. Find the coordinates of the fourth vertex.

18. Using distance formula, show that the points A, B and C are collinear: A(2, 3), B(3, 4), C(6, 7)

19. Find the area of the segment of a circle of radius 12 cm whose corresponding sector has a central angle of 60°.

20. A drinking glass is in the shape of a frustum of a cone of height 14 cm. The radii of its two circular ends are 4 cm and 2 cm. Find the capacity of the glass. (Take pi = 22/7)
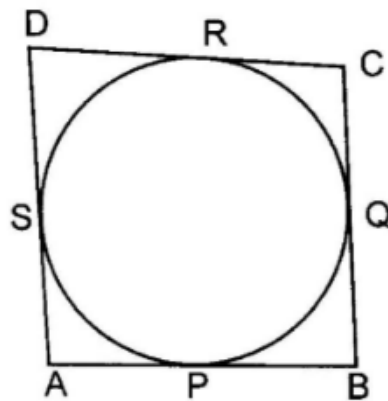
Section D

21. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.
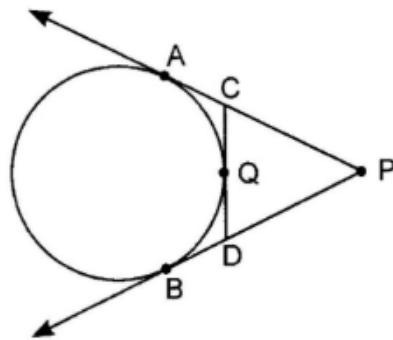
22.Three positive integers a_1 a_2, a_3 are in AP such that $a_1 + a_2 + a_3 = 33$ and $a_1 \times a_2 \times a_3 = 1155$. Find the integers a_1, a_2 and a_3.

23. A village Panchayat constructed a circular tank to serve as a bird bath. A fencing was made in the shape of quadrilateral ABCD to circumscribe the circle. Prove that AB + CD = AD + BC.
What values does the village Panchayat depict through this action?

24.In figure, PA and PB are tangents to circle drawn from an external point P. CD is a third tangent touching the circle at Q. If PB = 7 cm and CQ = 2.5 cm, find the length of CP.

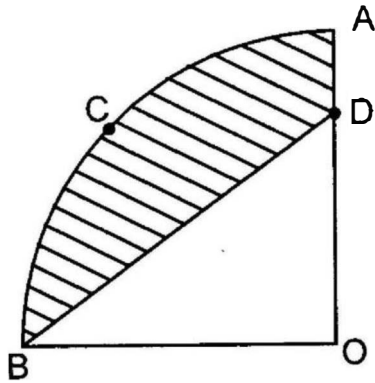25.The lengths of tangents drawn from an external point (point outside the circle) to a circle are equal. Prove it.

26.A circus artist is climbing a 20 m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole if the angle made by the rope with the ground level is 30°.

27.Two men standing on either side of a cliff 80 m high, observe the angles of elevation of the top of the cliff to be 30° and 60° respectively. Find the distance between the two men.

28. Find the area of the quadrilateral formed by joining the points: A(-4, -2), B(-3, -5), C(3, -2) and D(2, 3).

29. In figure, OACB is quadrant of a circle with centre O and radius 8 cm. If OD = 5 cm, find
(i) the area of the quadrant OACB.
(ii) the area of the shaded region. (Take pi = 22/7)

30. A solid consisting of a right circular cone of height 120 cm and radius 60 cm standing on a hemisphere of radius 60 cm is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm.(Take pi = 22/7)

31. A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends. The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area. (Take pi = 22/7)