

CBSE Sample Paper Class 10 Maths

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 be neat and exactly as per the given measurements.
- (v) Use of calculators is not permitted.

Section A

1. Determine whether the given value of x is a solution of the given quadratic equation or not:
 $6x^2 - x - 1 = 0$; $x = 1/2$.
2. Find 15th term of the AP with second term 11 and common difference 9.
3. Find the coordinates of the point which divides the line segment joining the points

(3, 5) and (7, 9) internally in the ratio 2 : 3.

4. In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find the length of the arc.

Section B

5. Using quadratic formula, solve the following quadratic equation: $2X^2 - 7x + 3 = 0$

6. Find the 31st term of an AP whose 11th term is 38 and the 16th term is 73.

7. A point P is 18 cm from the centre of a circle. The radius of the circle is 12 cm. Find the length of the tangent drawn to the circle from the point P.

8. In a box, there are 800 bulbs, out of which 20 bulbs are defective. One bulb is taken out at random. Find the probability that the bulb is not defective.

9. The radii of two circles are 8 cm and 6 cm respectively. Find the radius of the circle having area equal to the sum of the areas of these two circles.

10. A rectangular solid metallic cuboid 18 cm x 15 cm x 4.5 cm is melted and recast into solid cubes each of side 3 cm. How many solid cubes can be made?

Section C

11. Divide 39 into two parts such that their product is 324.

12. Determine the AP whose third term is 16 and the 7th term exceeds the 5th term by 12.

13. Solve for x: $(\frac{1}{x+4}) - (\frac{1}{x-7}) = \frac{11}{30}$, (x not equal to -4, 7)

14. Draw a triangle ABC with side $BC = 7$ cm, $B = 45^\circ$, $A = 105^\circ$. Then construct a triangle whose sides are $\frac{4}{3}$ times the corresponding sides of triangle ABC.

15. 21 cards are numbered 1, 2, ..., 20, 21 and placed in a box. The cards are mixed thoroughly. A card is drawn at random from the box. Find the probability that the number on the card is

(i) an even

(ii) a prime number

(iii) divisible

by 4

16. A box contains 80 discs which are numbered from 1 to 80. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number (ii) a perfect square number (iii) a number divisible by 5.

17. Find the value of k if the points $A(2,3)$, $B(4, k)$ and $C(6, -3)$ are collinear.

18. Find the value of k , if the point $P(2,3)$ is equidistant from the points $A(k, 1)$ and $B(7, k)$.

19. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes. (Take $\pi = \frac{22}{7}$)

20. A fez, the cap used by the Turks, is shaped like the frustum of a cone. If its radius on the open side is 10 cm, radius at the upper base is 4 cm and its slant height is 14 cm, find the area of material used for making it. (Take $\pi = \frac{22}{7}$)

Section D

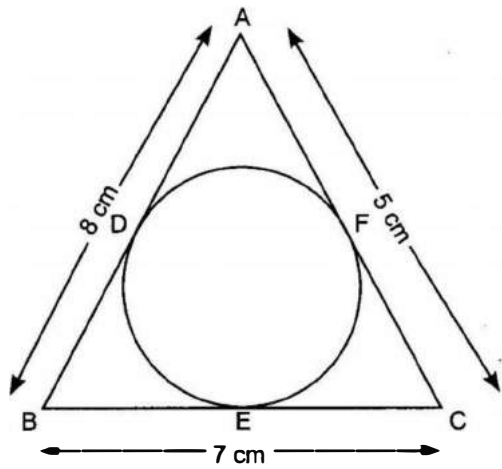
21. One year ago, a man was 8 times as old as his son. Now, his age is equal to the square of his son's age in years. Find their present ages.

22. A manufacturer of TV sets produced 600 units in the third year and 700 units in the 7th year. Assuming that the production increases uniformly by a fixed number every year, find

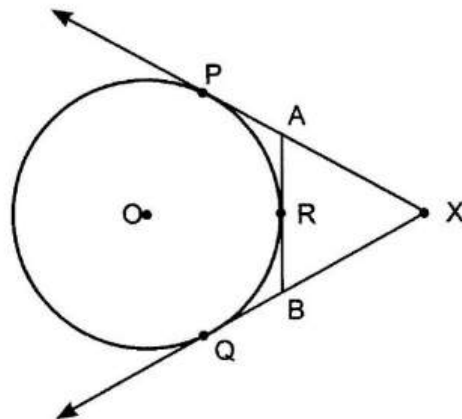
(i) the production in the first year, (ii) the production in the 10th year,

(iii) the total production in 7 years

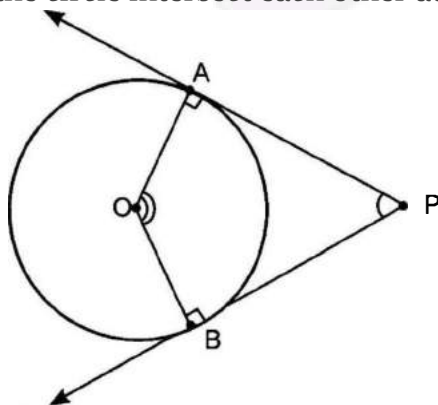
23. A circle is inscribed in $\triangle ABC$ having sides $AB = 8$ cm, $BC = 7$ cm and $AC = 5$ cm. Find AD , BE and CF



24. In figure, given below, XP and XQ are tangents from X to the circle with centre O and ARB is tangent at point R . Prove that $XA + AR = XB + BR$



25. If O be the centre of a circle and tangents drawn to the circle at the points A and B of the circle intersect each other at P , then prove that $\angle AOB + \angle APB = 180^\circ$.

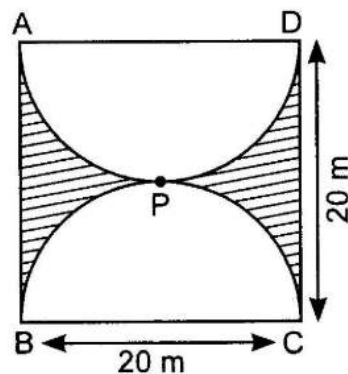


26. An electric pole is 12 m high. A steel wire tied to the top of the pole is affixed at a point on the ground to keep the pole upright. If the wire makes an angle of 60° with the horizontal through the foot of the pole, find the length of the wire. (Take $\sqrt{3} = 1.73$)

27. The angle of elevation of the top of a tower from a point on the ground is 45° . On walking 30 metres towards the tower, the angle of elevation becomes 60° . Find the height of the tower and the original distance from the foot of the tower. (Take $\sqrt{3} = 1.73$)

28. Find the length of the median through the vertex $A(5, 1)$ drawn to the triangle ABC where other two vertices are $B(1, 5)$ and $C(-3, -1)$.

29. Find the area of the shaded region in figure if ABCD is a square of side 20 m and APD and BPC are semicircles. (Take $\pi = 22/7$)



If shaded region is used by society for planting trees, then what value is reflected?

30. A solid is in the form of a cone mounted on a right circular cylinder both having same radii of their bases. Base of the cone is placed on the top base of the cylinder. If the radius of the base and height of the cone be 4 cm and 7 cm respectively and the height of the cylindrical part of the solid is 3.5 cm, find the volume of the solid. (Take $\pi = 22/7$)

31. A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius. The total height of the toy is 15.5 cm. Find the total surface area of the toy. (Take $\pi = 22/7$)