

# CBSE Previous Year Question Paper Class 10 Maths 2018

Time Allowed: 3 hours

Maximum Marks: 80

General Instructions:

- All questions are compulsory.
- This question paper consists of 30 questions divided into four sections- A, B, C and D.
- 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 and Section D contains 8 questions of 4 marks each.
- There is no overall choice. However, an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each, four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternative in all such questions.
- Use of calculators is not permitted.

## Section – A

Question 1.

If  $x = 3$  is one root of the quadratic equation  $x^2 - 2kx - 6 = 0$ , then find the value of  $k$ . [1]

Question 2.

What is the HCF of the smallest prime number and the smallest composite number? [1]

Question 3.

Find the distance of a point  $P(x, y)$  from the origin. [1]

Question 4.

In an AP if the common difference ( $d$ ) = -4 and the seventh term ( $a_7$ ) is 4, then find the first term. [1]

Question 5.

What is the value of  $(\cos^2 67^\circ - \sin^2 23^\circ)$ ? [1]

Question 6.

Given  $\triangle ABC \sim \triangle PQR$ , if  $\frac{AB}{PQ} = \frac{1}{3}$ , then find  $\frac{\text{ar}\triangle ABC}{\text{ar}\triangle PQR}$

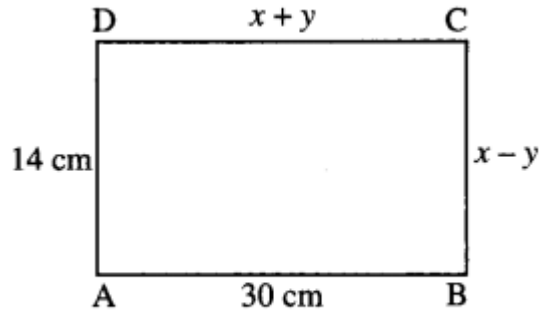
## Section – B

Question 7.

Given that  $\sqrt{2}$  is irrational, prove that  $(5 + 3\sqrt{2})$  is an irrational number. [2]

Question 8.

In fig. 1, ABCD is a rectangle. Find the values of  $x$  and  $y$ . [2]



**Figure 1**

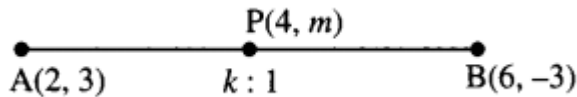
Question 9.

Find the sum of the first 8 multiples of 3.

[2]

Question 10.

Find the ratio in which  $P(4, m)$  divides the line segment joining the points  $A(2, 3)$  and  $B(6, -3)$ . Hence find  $m$ . [2]



Question 11.

Two different dice are tossed together. Find the probability:

(i) of getting a double.

(ii) of getting a sum 10, of the numbers on the two dice.

[2]

Question 12.

An integer is chosen at random between 1 and 100. Find the probability that it is:

(i) divisible by 8.

(ii) not divisible by 8.

[2]

### Section – C

Question 13.

Find HCF and LCM of 404 and 96 and verify that  $\text{HCF} \times \text{LCM} = \text{Product of the two given numbers}$ . [3]

Question 14.

Find all zeroes of the polynomial  $(2x^4 - 9x^3 + 5x^2 + 3x - 1)$  if two of its zeroes are  $(2 + \sqrt{3})$  and  $(2 - \sqrt{3})$ . [3]

Question 15.

If  $A(-2, 1)$  and  $B(a, 0)$ ,  $C(4, b)$  and  $D(1, 2)$  are the vertices of a parallelogram ABCD, find the values of  $a$  and  $b$ . Hence find the lengths of its sides. [3]

OR

If  $A(-5, 7)$ ,  $B(-4, -5)$ ,  $C(-1, -6)$  and  $D(4, 5)$  are the vertices of a quadrilateral, find the area of the quadrilateral ABCD.

Question 16.

A plane left 30 minutes late than its scheduled time and in order to reach the destination 1500 km away in time, it had to increase its speed by 100 km/h from the usual speed.

Find its usual speed. [3]

Question 17.

Prove that the area of an equilateral triangle described on one side of the square is equal to half the area of the equilateral triangle described on one of its diagonal. [3]

OR

If the area of two similar triangles is equal, prove that they are congruent.

Question 18.

Prove that the lengths of tangents drawn from an external point of a circle are equal. [3]

Question 19.

If  $4 \tan \theta = 3$ , evaluate  $\left( \frac{4 \sin \theta - \cos \theta + 1}{4 \sin \theta + \cos \theta - 1} \right)$

OR

If  $\tan 2A = \cot (A - 18^\circ)$ , where  $2A$  is an acute angle, find the value of  $A$ .

Question 20.

Find the area of the shaded region in Fig. 2, where arcs are drawn with centres A, B, C and D intersect in pairs at mid-points P, Q, R and S of the sides AB, BC, CD and DA respectively of a square ABCD of side 12 cm. [Use  $\pi = 3.14$ ] [3]

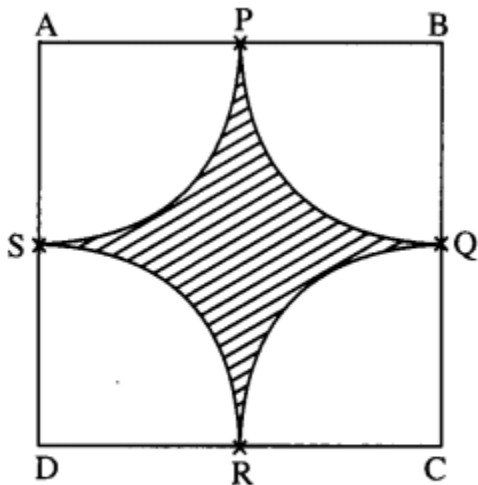
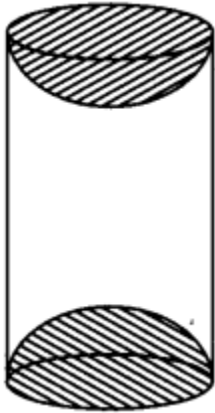


Fig. 2

Question 21.

A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in Fig. 3. If the height of the cylinder is 10 cm and its base is of radius 3.5 cm. Find the total surface area of the article. [3]



OR

A heap of rice is in the form of a cone of base diameter 24 m and height 3.5 m. Find the volume of the rice. How much canvas cloth is required to just cover the heap?

Question 22.

The table below shows the salaries of 280 persons:

[3]

Salary (In thousand ₹)	No. of Person
5 – 10	49
10 – 15	133
15 – 20	63
20 – 25	15
25 – 30	6
30 – 35	7
35 – 40	4
40 – 45	2
45 – 50	1

Calculate the median salary of the data.

**Section – D**

Question 23.

A motorboat whose speed is 18 km/hr in still water takes 1 hr more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream. [4]

OR

A train travels at a certain average speed for a distance of 63 km and then travels at a distance of 72 km at an average speed of 6 km/hr more than its original speed. If it takes 3 hours to complete the total journey, what is the original average speed?

Question 24.

The sum of four consecutive numbers in an AP is 32 and the ratio of the product of the first and the last term to the product of two middle terms is 7:15. Find the numbers. [4]

Question 25.

In an equilateral  $\triangle ABC$ , D is a point on side BC such that  $BD = \frac{1}{3} BC$ . Prove that  $9(AD)^2 = 7(AB)^2$ .

[4]

OR

Prove that, in a right triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides.

Question 26.

Draw a triangle ABC with BC = 6 cm, AB = 5 cm and  $\angle ABC = 60^\circ$ . Then construct a triangle whose sides are  $\frac{3}{4}$  of the corresponding sides of the  $\triangle ABC$ . [4]

Question 27.

Prove that : 
$$\frac{\sin A - 2 \sin^3 A}{2 \cos^3 A - \cos A} = \tan A. \quad [4]$$

Question 28.

The diameters of the lower and upper ends of a bucket in the form of a frustum of a cone are 10 cm and 30 cm respectively. If its height is 24 cm, find:

(i) The area of the metal sheet used to make the bucket.

(ii) Why we should avoid the bucket made by ordinary plastic? [Use  $\pi = 3.14$ ] [4]

Question 29.

As observed from the top of a 100 m high lighthouse from the sea-level, the angles of depression of two ships are  $30^\circ$  and  $45^\circ$ . If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. [Use  $\sqrt{3} = 1.732$ ] [4]

Question 30.

The mean of the following distribution is 18. Find the frequency  $f$  of the class 19-21. [4]

Class	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 24
Frequency	3	6	9	13	$f$	5	4

OR

The following distribution gave the daily income of 50 workers of a factory:

Daily Income (in ₹)	100 - 120	120 - 140	140 - 160	160 - 180	180 - 200
Number of Workers	12	14	8	6	10

Convert the distribution above to a less than type cumulative frequency distribution and draw its give.