
CBSE Class 10 Mathematics
Practice Paper-01

General Instructions:

- i. All questions are compulsory.
 - ii. The question paper consists of 30 questions, divided into four sections-A, B, C & 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 and Section D contains 8 questions of 4 marks each.
 - iv. Use of calculator is not permitted.
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SECTION-A

1. Write maximum number of zeroes for $p(x) = x^3 + 3x^2 - 3x + 1$
2. If $\Delta ABC \sim \Delta PQR$ ar $(\Delta ABC) = 16\text{cm}^2$ and ar $(PQR) = 81\text{cm}^2$, $AB = 2\text{cm}$ find PQ .
3. The ratio of the height of a tower and the length of its shadow on the ground is $\sqrt{3} : 1$.
What is the angle of the sun?
4. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of hemisphere.
5. A number is chosen at random from the numbers -3, -2, -1, 0, 1, 2, 3. What will be the probability that square of this number is less than or equal to 1?
6. If the distance between the points $(4, k)$ and $(1, 0)$ is 5, then what can be the possible values of k ?

SECTION-B

7. Find the sum of all 2 digit positive numbers divisible by 3.
8. A dice is thrown once. Find the probability of getting a) a prime number b) a number divisible by 2.
9. Find the ratio in which the line segment joining the points $A(3, -6)$ and $B(5, 3)$ is divided by x axis.
10. If $3 \cot A = 4$ then find the value of $\frac{\text{Cosec}^2 A + 1}{\text{Cosec}^2 A - 1}$

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11. Prove $\frac{\sin \theta}{\sin(90-\theta)} + \frac{\cos \theta}{\cos(90-\theta)} = \sec \theta \operatorname{cosec} \theta$
12. Find HCF of 455 and 84 by Endils division lemma.

SECTION-C

13. Prove that $5 - \sqrt{3}$ is an irrational number
14. Find all the zeroes of polynomial,

$$p(x) = x^4 - 5x^3 + 2x^2 + 10x - 8 \text{ if its two zeroes are } \sqrt{2} \text{ and } -\sqrt{2}$$

OR

Find zeroes of $3\sqrt{2}x^2 + 13x + 6\sqrt{2}$ and verify the relation between the zeroes and the coefficients.

15. Solve for x and y

$$\frac{x}{a} + \frac{y}{b} = 2$$

$$ax - by = a^2 - b^2$$

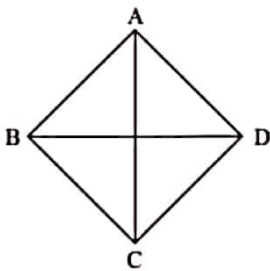
16. Find the value of k for which the equation $x^2 + k(2x + k - 1) + 2 = 0$ has real and equal roots

OR

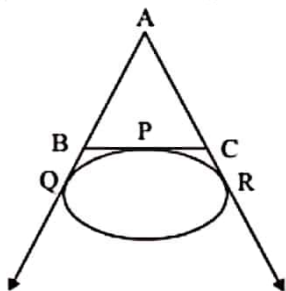
Solve the following equation for x-

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{x} = \frac{1}{a+b+x}$$

17. If sum of first n terms of an A.P is $5n^2 - 3n$ find the A.P and also find its sixteenth term.
18. In the given figure ABCD is a rhombus than prove that $4 AB^2 = AC^2 + BD^2$

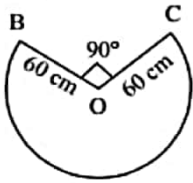


19. In the given figure, a circle touches the side BC of ΔABC at P and touches AB and AC produced at Q and R respectively. If AQ = 5 cm, find the perimeter of ΔABC .



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20. In the given figure the shape of the top of a table in a restaurant is that of a sector of circle with centre O and $\angle BOD = 90^\circ$, If $OB = OD = 60$ cm find the perimeter of the table top [use $\pi = 3.14$].



21. A solid cylinder of radius r and height h is placed over other cylinder of same height and radius. Find the total surface Area of the shape so formed.
22. If median of the following distribution is 35 find the value of x & y

| C.I. | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | Total |
|------|------|-------|-------|-------|-------|-------|-------|-------|
| f | 10 | 20 | x | 40 | y | 25 | 15 | 170 |

SECTION-D

23. $\sec \theta = x + \frac{1}{4x}$ then prove that $\sec \theta + \tan \theta = 2x$ or $\frac{1}{2x}$.

OR

The angle of elevation of a jet plane from a point A on the ground is 60° . After a flight of 15 seconds the angle of elevation changes to 30° . If the jet plane is flying at a constant height of $1500\sqrt{3}$ m find the speed of the jet plane.

24. A Shopkeeper buys a number of books for Rs. 1200. If he had bought 10 more books for the same amount, each book would have cost Rs 20 less. How many books did he buy?

OR

A boat travels 24 km upstream and 28 km downstream in 6 hours. If it travel 30 km upstream and 21 km down stream in 6 hours and 30 minutes. Find the speed of boat in still water.

25. Construct a pair of tangents to a circle of radius 4 cm inclined at an angle of 45° .
26. A cone of radius 10 cm is divided into two parts by a plane parallel to its base through the mid point of its height. Compare the volumes of the two parts.
27. Peter throws two different dice together and finds the product of the two numbers obtained. Rina throws a die and squares the number obtained. Who has the better chance to get the number 25?
28. State and prove Basic Proportionality theorem.

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

29. The following distribution gives annual profit of 30 shops

| Profit (In lakhs) | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 |
|-------------------|-----|------|-------|-------|-------|
| No. of Shops | 3 | 14 | 5 | 6 | 2 |

Draw less than ogive and more than ogive of above distribution and also find the median from the graph.

30. The points A (2, 9), B (a, 5), C (5, 5) are the vertices of a $\triangle ABC$, right angled at B. find the value of a and hence find the area of $\triangle ABC$.

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