



Exam Mate



Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main & Advanced.

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MOCK TEST PAPER # 4

CLASS-X (MATHEMATICS)

Time Allowed : 3 hours

Maximum Marks: 80

GENERAL INSTRUCTIONS

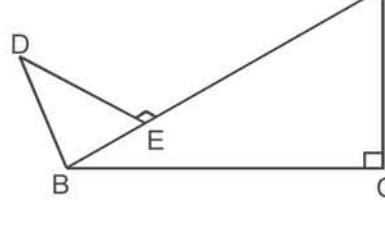
- All questions are compulsory. There are 30 questions in all.
- This question paper has four sections : Section A, Section B, Section C and Section D.
- Section A contains 6 questions of one mark each, Section B contains 6 questions of two marks each, Section C contains 10 questions of three marks each, Section D contains 8 questions of four marks each.
- There is no overall choice. However, an internal choice has been provided in four questions of three marks each and three questions of four marks each. You have to attempt only one of the choices in such questions.
- Use of calculators is not permitted.

SECTION-A

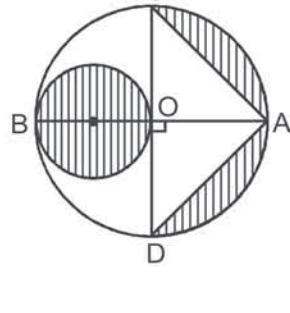
- Write whether the rational number $\frac{51}{1500}$ will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
- Write the nature of roots of quadratic equation $4x^2 + 4\sqrt{3}x + 3 = 0$.
- Find the value of k, if P(4, -2) is the mid point of the line segment joining the points A(5k, 3) and B(-k, -7).
- If $\sec 4A = \operatorname{cosec}(A - 20^\circ)$, where $4A$ is an acute angle, then find the value of A.
- A cylinder and a cone are of same base radius and of same height. Find the ratio of the volume of cylinder to that of the cone.
- A die is thrown twice. What is the probability that the same number will come up either time?

SECTION-B

- The decimal expansion of the rational number $\frac{43}{2^4 \cdot 5^3}$, will terminate after how many places of decimals?
- Find all the zeroes of the polynomial $2x^4 + 7x^3 - 19x^2 - 14x + 30$, if two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$.
- Find the ratio in which the point $P\left(\frac{3}{4}, \frac{5}{12}\right)$ divides the line segment joining the points $A\left(\frac{1}{2}, \frac{3}{2}\right)$ and $B(2, -5)$.
- E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F. Show that $\triangle ABE \sim \triangle CFB$
- In the following figure, $DB \perp BC$ and $AC \perp BC$. Prove that $\frac{BE}{DE} = \frac{AC}{BC}$



- In the given figure, AB and CD are two diameters of a circle with centre O, which are perpendicular to each other. OB is the diameter of the smaller circle. If $OA = 7$ cm, find the area of the shaded region. [Use $\pi = \frac{22}{7}$]



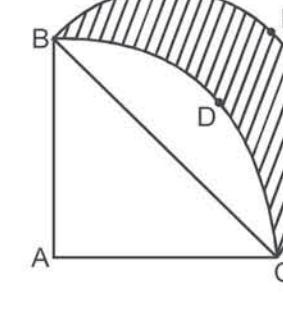
SECTION-C

- Show that the square of any positive odd integer is of the form $8m + 1$, for some integer m.
- Find the value of p for which the quadratic equation $(2p+1)x^2 - (7p+2)x + (7p-3) = 0$ has equal roots. Also find these roots.
- Solve for x and y:

$$\frac{ax - by}{b} = a + b$$

$$ax - by = 2ab$$

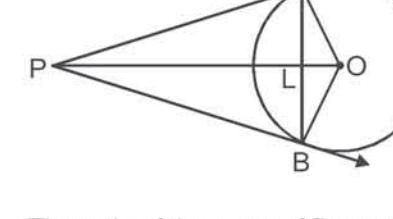
- The sum of first n terms of an A.P. is $3n^2 + 4n$. Find the 25th term of this A.P.
- If $(3, 3), (6, y), (x, 7)$ and $(5, 6)$ are the vertices of a parallelogram taken in order, find the value of x and y.
- Draw a triangle ABC with side BC = 7 cm, $\angle B = 45^\circ$ and $\angle A = 105^\circ$. Then construct a triangle whose sides are $\frac{3}{5}$ times the corresponding sides of $\triangle ABC$.
- Evaluate: $\frac{2}{3} \cos ec^2 58^\circ - \frac{2}{3} \cot 58^\circ \tan 32^\circ - \frac{5}{3} \tan 13^\circ \tan 37^\circ \tan 45^\circ \tan 53^\circ \tan 77^\circ$
- In the given figure, ABDC is a quadrant of a circle of radius 28 cm and a semi-circle BEC is drawn with BC as diameter. Find the area of the shaded region. [Use $\pi = \frac{22}{7}$]



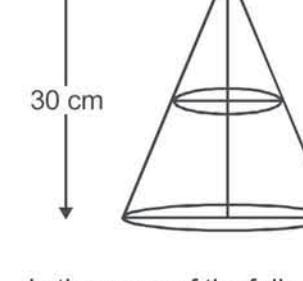
- Cards numbered 1 to 30 are put in a bag. A card is drawn at random from this bag. Find the probability that the number on the drawn card is (i) not divisible by 3 (ii) a prime number greater than 7 (iii) not a perfect square number.
- If S_n , the sum of first n terms of an A.P. is given by $S_n = 3n^2 - 4n$, then find its n^{th} term.

SECTION-D

- Solve the following for x: $\frac{1}{2a+b+2x} = \frac{1}{2a} + \frac{1}{b} + \frac{1}{2x}$
- In the given figure, AB is a chord of a circle, with centre O, such that AB = 16 cm and radius of circle is 10 cm. Tangents at A and B intersect each other at P. Find the length of PA.



- The ratio of the sums of first m and first n terms of an A.P. is $m^2 : n^2$. Show that the ratio of its m^{th} and n^{th} terms is $(2m-1) : (2n-1)$.
- In a triangle, if the square of one side is equal to the sum of the squares of the other two sides, then prove that the angle opposite to the first side is a right angle.
In an isosceles triangle PQR, PQ = QR and $PR^2 = 2PQ^2$. Prove that $\angle Q$ is a right angle.
- A lighthouse, 100 m high above sea level, the angles of depression of a ship, sailing directly towards it, changes from 30° to 60° . Find the distance travelled by the ship during the period of observation (Use $\sqrt{3} = 1.73$).
- If $\tan \theta + \sin \theta = m$ and $\tan \theta - \sin \theta = n$, show that $m^2 - n^2 = 4\sqrt{mn}$.
- In the given figure, there is shown a right circular cone of height 30 cm. A small cone is cut off from the top by a plane parallel to the base. If the volume of the small cone is $\frac{1}{27}$ of the volume of given cone, at what height above the base is the section made?



- In the mean of the following frequency distribution is 65.6, find the missing frequencies (f_1, f_2)

Class	Frequency
10 – 30	5
30 – 50	8
50 – 70	f_1
70 – 90	20
90 – 110	f_2
110 – 130	2
Total	50

For Answers visit: www.dharitri.com

