

Maths: Practice Test Paper (Class X)

Time: 3 hour

Max. Marks: 80

General Instructions:

- i. All questions are compulsory.
- ii. The question paper consists of **30** questions divided into four sections A, B, C and D. **Section A** comprises of 10 questions of **01 mark** each, **Section B** is of 5 questions of **02 marks** each, **Section C** comprises of 10 questions of **03 marks** each, and **Section D** comprises of 5 questions of **06 marks** each.
- iii. All questions in Section A are to be answered in one word, one sentence or as per the exact requirement of the question.
- iv. There is no overall choice. However, internal choice has been provided in one questions of two marks each, three questions of three marks each, and two questions of six marks each.
- v. In question on construction, the drawing should be neat and exactly as per the given measurements.
- vi. Use of calculator is NOT permitted. However, you may ask for mathematical tables.

SECTION A

1. If $\frac{p}{q} = 26.\overline{372158}$, what can you say about the prime factors of 'q'?
2. If one of the zero of polynomial, $2x^2+x-6$ be -2, what will be the second zero?
3. Find the value of 'k' so that the quadratic equation $kx^2 - 3kx + (2k+1) = 0$ has equal roots.
4. Given that $\operatorname{cosec} A = \sqrt{2}$, evaluate $\frac{2\sin^2 A + 3\cot^2 A}{\tan^2 A - \sin^2 A}$
5. Which term of the sequence 39, 33, 27, is first negative term?
6. The base radii of a cone and a cylinder are equal. If their curved surface areas are equal, then what is the ratio of the slant height of cone to the height of cylinder?
7. $\Delta ABC \sim \Delta PQR$ such that $\operatorname{ar}(\Delta ABC) = \frac{1}{4} \operatorname{ar}(\Delta PQR)$. Given that $BC = 3\text{cm}$, find QR .
8. A square circumscribes a circle of radius 8 cm. Find the side of the square.
9. Amit was born in July 2000. What is the probability that he was born on 3rd of July?
10. A number 'x' is chosen at random from -5, -4, -3, -2, 0, 1, 2, 3, 4, 5. Find the probability that $|x| \leq 4$.

SECTION B

11. The sum of two angles of a triangle is double the third angle. If the difference of these two angles is 40° , find the angles of the triangle.
12. Evaluate $\frac{-\tan^2\theta \cot^2\theta + \sec^2\theta \operatorname{cosec}^2\theta + \sin^2 35 + \sin^2 55}{\tan 10 \cdot \tan 20 \cdot \tan 30 \cdot \tan 70 \cdot \tan 80}$

13. If A(5, -1), B(-3, -2), and C(-1, 8) are the vertices of ΔABC , find the length of median through A.
14. Right triangles BAC and BDC, right angled at A and D respectively are drawn on same base and on the same side of BC. If AC and DB intersect at P, prove that
 $AP \times PC = PD \times PB$
15. One card is drawn at random from a pack of 52 cards. Find the probability that the card drawn is (i) either red or a king, (ii) black and a queen.

OR

A card is drawn at random from a well shuffled pack of cards. Find the probability that the card drawn is (i) a spade or an ace, (ii) neither a king nor a queen.

SECTION C

16. Using Euclid's division lemma, find the HCF of 144, 180, and 192.

OR

Show that $5 - \sqrt{3}$ is an irrational number.

17. Find the zeroes of the polynomial $p(x) = 4\sqrt{3}x^2 + 5x - 2\sqrt{3}$, and verify the relationship between the zeroes and its coefficients.
18. Draw the graph of the following equations: $4x - 3y + 4 = 0$ and $4x + 3y - 20 = 0$. Find the area bounded by these lines and x-axis.
19. Rama Rao starts repaying a loan as first instalment of Rs. 500. If he increases the instalment by Rs.25 every month, what amount will he pay in the 30th instalment.

20. Prove that $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$

OR

In the fig.1, ABC is a right angled triangle in which $\angle C=90^\circ$. D is the point on BC such that

$BD : DC = 2 : 1$. Show that $\frac{\tan\theta}{\tan\phi} = \frac{1}{3}$

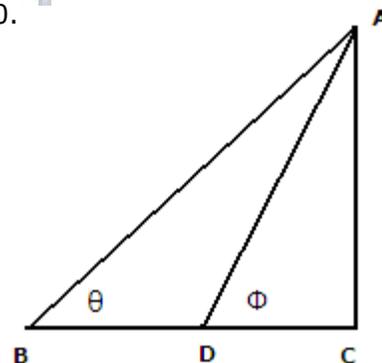


Fig. 1

21. Find the third vertex of a triangle if its two vertices are (-1, 4) and (5, 2) and mid-points of one side is (0, 3).
22. Find the ratio in which C (p, 1) divides the join of A (-4, 4) and B (6, -1) and hence find the value of 'p'.
23. Draw a circle of diameter 12 cm. From a point 10 cm away from its centre, construct a pair of tangents to the circle. Measure the lengths of the tangent segments.

24. In fig. 2, a circle touches all the four sides of a quadrilateral ABCD whose sides are AB=6 cm, BC= 7 cm, CD=4 cm. Find AD.

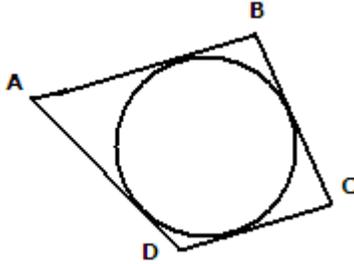


Fig. 2

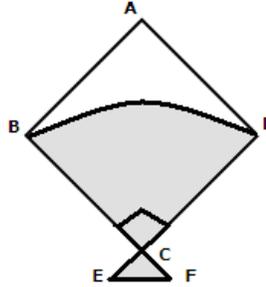


Fig. 3

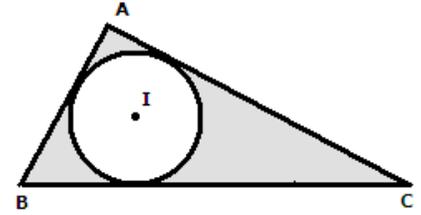


Fig. 4

25. Fig. 3, shows a kite, in which BCD is in the shape of a quadrant of circle of radius 42 cm, ABCD is a square and ΔCEF is an isosceles right angled triangle whose equal sides are 6 cm long. Find the area of the shaded region.

OR

In fig. 4, ABC is right angled triangle at A. Find the area of shaded region if AB=6 cm, BC=10 cm, and I is the centre of incircle of ΔABC .

SECTION D

26. The diagonal of a rectangular field is 60 m more than the shorter side. If the longer side is 30 m more than the shorter side, find the sides of the field.

OR

An express train takes 1 hour less than a passenger train to travel a distance of 132 km. If the average speed of the express train is 11 km/h more than that of the passenger train, find the average speed of the train.

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

Using the above theorem, do the following: A man goes 10 m due east and then 24 m due north. Find the distance from the starting point.

28. The angle of elevation of the top of a tower at a point on the level ground is 30° . After walking a distance of 100 m towards the foot of the tower is 60° . Find the height of the tower.

OR

The angle of elevation of an aeroplane from a point on the ground is 30° . After a flight of 15 seconds the elevation changes to 45° . If the aeroplane is flying at a constant height of 4500 m, find the speed of the plane.

29. The perimeters of the ends of the frustum of a solid cone are 88 cm and $56\frac{4}{7}$ cm. If the height of the frustum is 12 cm, find the total surface area of frustum.

30. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the median and mode of the data.

Monthly consumption (in units)	65-85	85-105	105-125	125-145	145-165	165-185	185-205
No. Of consumers	4	5	13	20	14	8	4