

K12 ASPIRE

The Center of Learning Excellence

No 10A, 2nd Floor, Thiruvalluvar Nagar
1st Main Road, Thiruvanmiyur, Chennai 600041
9962006587 / 88

CLASS X CBSE MATHS TEST SERIES PAPER 2

Topics Covered

Trigonometry
Arithmetic Progression

PART A

Answer any 10 questions.

10 * 2 = 20

1. If $\cos 2A = \sin(A - 15)$. Find A.
2. If $\tan(3x + 30^\circ) = 1$, then find the value of 'x'.
3. Find the value of $\cot 10^\circ$, $\cot 30^\circ$, $\cot 80^\circ$.
4. Evaluate: $\frac{\operatorname{cosec} 13}{\sec 77} - \frac{\cot 20}{\tan 70}$
5. If $\sqrt{2} \sin \theta = 1$, find $\sec^2 \theta - \operatorname{Cosec}^2 \theta$.
6. Find the value of $\cos 2\theta$, if $2\sin 2\theta = \sqrt{3}$.
7. Evaluate: $\frac{\cos 45}{\sec 30} + \frac{1}{\sec 60}$
8. Find the value of $\sin^2 41 + \sin^2 49$.
9. Prove that, $\sec^4 \theta + \sec^2 \theta = \tan^4 \theta + \tan^2 \theta$.
10. Calculate: $\cot^2 \theta - \frac{1}{\sin^2 \theta}$
11. Determine k, so that $\frac{2}{3}$, k, $\frac{5k}{8}$ are the three consecutive terms of an A.P.
12. Is 63 a term of A.P: -1, 4, 9, 14....?
13. Find the sum of the first 200 Natural numbers.
14. Which term of the A.P: 3, 15, 27, 39..... will be 120 more than its 21st term?
15. Find the sum of all natural numbers between 200 and 1502 which are divisible by 3.

PART B

Answer any 4 questions

4 * 3 = 12

1. Find 'x' if, $\cos(40^\circ + x) = \sin 30^\circ$
2. Evaluate: $\frac{5\cos^2 60 + 4\cos^2 30 - \tan^2 45}{\sin^2 30 + \cos^2 60}$
3. Simplify: $\frac{\sin\theta \sec(90^\circ - \theta)\tan\theta}{\operatorname{cosec}(90^\circ - \theta)\cos\theta \cot(90^\circ - \theta)} - \frac{\tan(90^\circ - \theta)}{\cot\theta}$
4. If, $\tan A + \cot A = 2$, then find $\tan^2 A + \cot^2 A$.
5. How many terms of A.P: -6, -11/2, -5.... Are needed to give the sum -25?
6. The 8th term of an A.P is zero. Prove that it's 38th term is triple it's 18th term.
7. The interior angles of a polygon are in A.P. the smallest angle is 120° and the common difference is 5°. Find the number of sides of the polygon.

PART C

Answer any 2 questions.

2 * 4 = 8

1. Evaluate: $\tan^2 30 \sin 30 + \cos 60 \sin^2 90 \tan^2 60 - 2\tan 45 \cos^2 0 \sin 90$
2. Given that, $\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$, find the values of $\tan 75^\circ$ and $\tan 90^\circ$ by taking suitable values of A and B.
3. An aeroplane flying horizontally at a height of 2500m above the ground is observed at an elevation of 60° and after 15 secs, the elevation is observed to be 30°. Find the speed (in Km/h) of the aeroplane.
4. The sum of the 4th and 8th terms of an A.P is 24 and the sum of 6th and 10th terms is 44. Find the first 3 terms of the A.P.

All the best

- X -