

ST MARY'S ANGLO-INDIAN HR. SEC. SCHOOL, CHENNAI-1

FL\05 28 May 2020

HOME PRACTICE TEST SERIES – 5

X STD

MATHEMATICS

Time: 1 Hr. 15 min.

SECTION – I

Marks: 40

Answer all the questions:

Each question carries 2 marks.

12 × 2 = 24

1. The area of a triangle is 5 sq. units. Two of its vertices are (4 ,1) and (5 , -3). The third vertex is (x, y) where $y = x + 2$. Find the coordinates of the third vertex.
2. Prove that the condition required for the lines $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ to be perpendicular is $a_1a_2+ b_1b_2 = 0$
3. Find the equation of the line passing through (1 , 2) and making an angle of 30° with y-axis.
4. A line passing through the points (a , 2a) and (-2 , 3) is perpendicular to the line $4x + 3y + 5 = 0$, find the value of a.
5. If the straight line $y = mx + c$ passes through the points (2 , 4) and (-3 , 6). Find the values of m and c.
6. The CSA and volume of a cylindrical pillar 264 m^2 and 924 m^3 . Then find its diameter.
7. A copper sphere of diameter 18 cm is drawn into a wire of diameter 4 mm. Find the length of the wire made.
8. A hemispherical bowl of internal radius 9 cm contains a liquid. This liquid is to be filled into cylindrical shaped small bottles of diameter 3 cm and height 4 cm. How many bottles will be needed to transfer all the liquid into bottles from the hemispherical container.
9. The diameter of the moon is approximately one-fourth of the diameter of the earth. Find the ratio of their surface areas.
10. If $\sec \theta + \tan \theta = x$, then prove that $\sec \theta = \frac{x^2+1}{2x}$.
11. Prove that $(\operatorname{cosec} \theta - \cot \theta)^2 = \frac{1-\cos \theta}{1+\cos \theta}$
12. A tower is $100\sqrt{3}$ m high. Find the angle of elevation of its top from a point 100 m away from it foot.

SECTION – II

Answer both the questions:

Each question carries 8 marks.

2 × 8 = 16

13. Draw a circle of diameter of 6 cm and from a point P, which is 8 cm away from its centre, draw two tangents to the circle and measure their lengths.
14. Draw the graph of $y = x^2 - 4x + 3 = 0$ and hence solve $x^2 - 6x + 9 = 0$
