# CBSE Assignment 30-1-2

January 10, 2024

1. Find the coordinates of a point $A$, where $AB$ is a diameter of the circle with centre $(-2, 2)$ and $B$ is the point with coordinates $(3, 4)$.

2. Find the value of $k$ for which the following pair of linear equations have infinitely many solutions. $2x + 3y = 7$ , $(k + 1)x + (2k - 1)y = 4k + 1$

3. Find the area of the segment shown in Figure 1, if radius of the circle is $21cm$ and $\angle AOB = 120°$ Use $\left(n = \frac{22}{7}\right)$

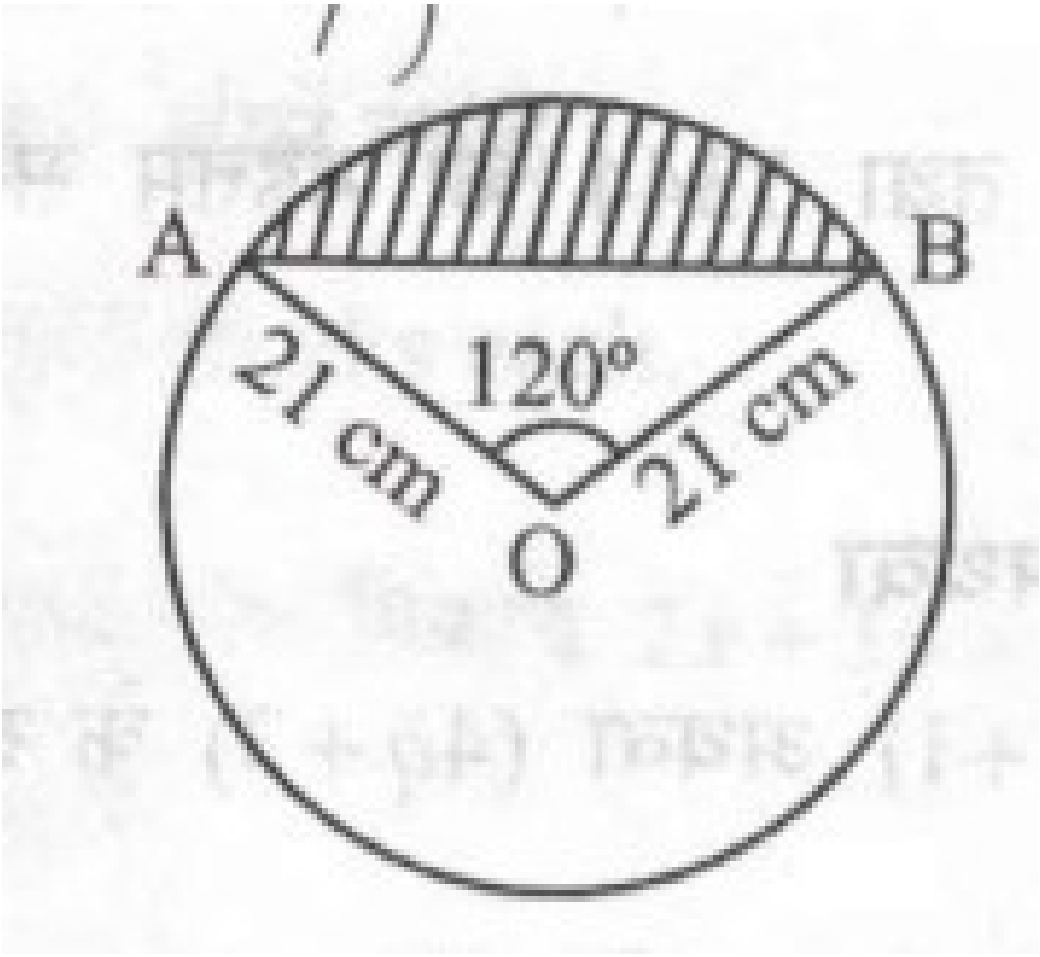


Figure 1

4. In Figure 2, a circle is inscribed in a $\triangle ABC$ having sides $BC = 8cm$, $AB = 10cm$ and $AC = 12cm$. Find the lengths $BL$, $CM$ and $AN$.

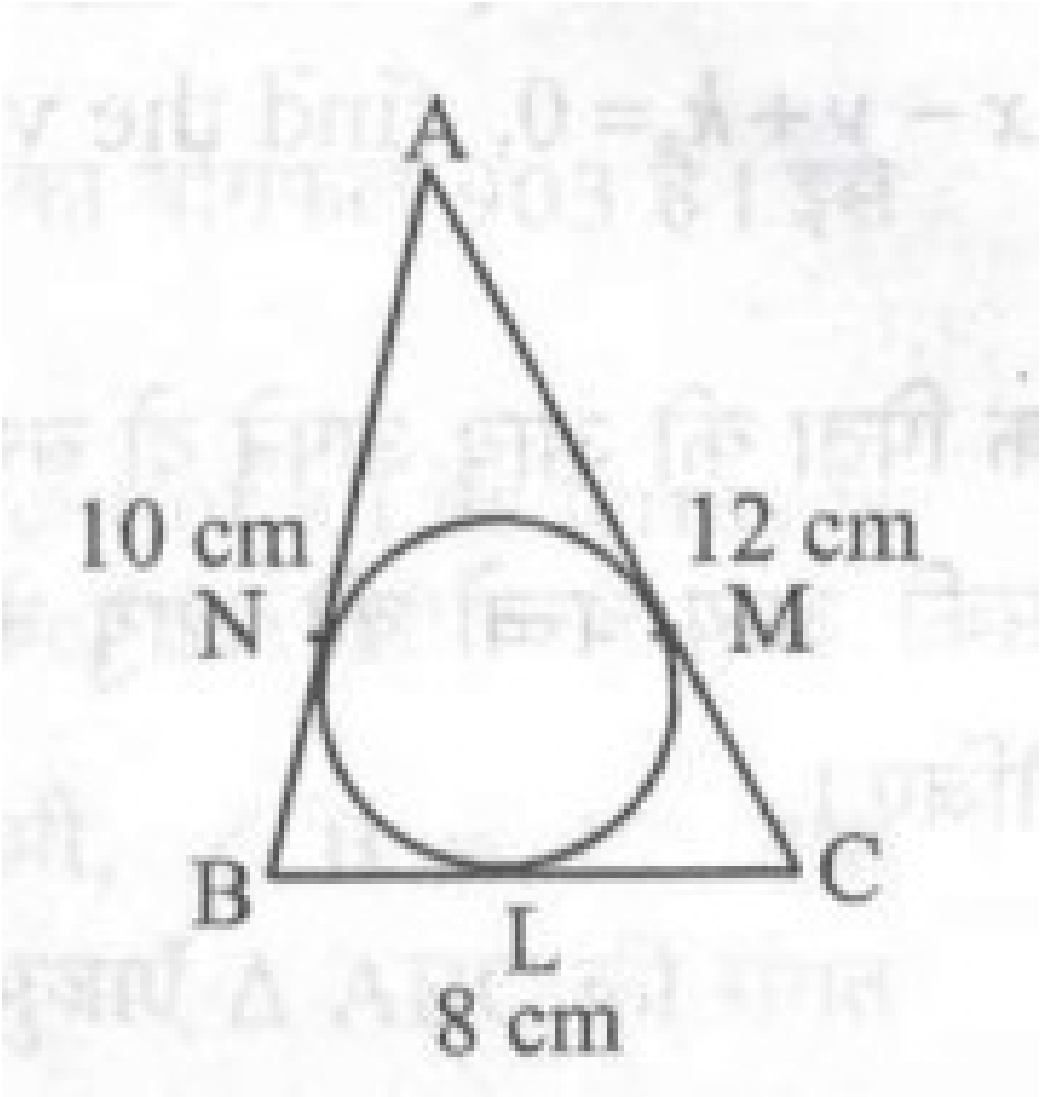


Figure 2

5. prove that

$$\frac{\tan^2 A}{\tan^2 A - 1} + \frac{\csc^2 A}{\sec^2 A - \csc^2 A} = \frac{1}{1 - 2\cos^2 A} \tag{1}$$

6. The first term of an AP is 3, the last term is 83 and the sum of all its terms is 903. Find the number of terms and the common difference of the AP.

7. Construct a triangle $ABC$ with side $BC = 6cm$, $\angle B = 45^{\circ}$, $\angle A = 105^{\circ}$. Then construct another triangle whose sides are $\frac{3}{4}$ times the corresponding sides of the $\triangle ABC$

8. Two positive integers $a$ and $b$ can be written as $a = x^3 * y^2$ and $b = x * y^3$. x,y are prime numbers. Find $LCM(a, b)$.

9. If the sum of first $n$ terms of an $AP$ is $n^2$, then find its 10th term.

10. Find all zeros of the polynomial $3x^3 + 10x^2 - 9x - 4$ if one of its zero is 1.

11. Prove that $\frac{2+\sqrt{3}}{5}$ is an irrational number, given that $\sqrt{3}$ is an irrational number.

12. if If $\sec\theta = x + \frac{1}{4x}$, where $x \neq 0$, find $(\sec\theta + \tan\theta)$.

13. Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides.