CBSE Class 10 Maths Notes Chapter 12: Get all of the class 10 notes on a topic about circles here. This page contains the following circle-related concepts: area, circumference, segment, sector, angle, length, and area for a circle's sector. Additionally, some plane and solid figure areas' visualisation is covered here.

We will study how to calculate the circumference, and length of an arc in a sector, areas of circles, areas of segments and sectors of circles, and other related concepts in the Class 10 chapter "Areas Related to Circles." A circle is a figure with two dimensions. All of the points on this curving form are equally spaced from the center. Now let's explore how to locate regions connected to the circle in this post.

CBSE Class 10 Maths Notes Chapter 12

Area of a Circle

The area of a circle is πr^2, where $\pi=22/7$ or ≈ 3.14 (can be used interchangeably for problem-solving purposes) and r is the radius of the circle.
π is the ratio of the circumference of a circle to its diameter.
Example: Find the area of a circle with radius = 7cm.
Solution: Given, the radius of the circle = 7cm
By the formula we know;
Area of circle = πr^2
= $\pi(7)^2$
= $(22/7)\ (7)^2$
= 154 sq. cm.

Circumference of a Circle

The circumference of a circle is the distance covered by going around its boundary once.

The perimeter of a circle has a special name: Circumference, which is π times the diameter which is given by the formula;
Circumference of a circle = $2\pi r$.

Example: The circumference of a circle whose radius is 21cm is given by;
C = $2\pi r$
= 2 (22/7) (21)
= 132 cm

Segment of a Circle

A circular segment is a region of a circle that is “cut off” from the rest of the circle by a secant or a chord.

Sector of a Circle

The area of a circle bounded by two radii and an arc is called a sector or circle sector. The term "minor sector" refers to the smaller area and the "major sector" to the bigger region.

Angle of a Sector

The angle of a sector is the angle that is enclosed between the two radii of the sector.

Area of a Sector of a Circle

The area of a sector is given by

$$(\theta/360°)\times\pi r2$$

where ∠θ is the angle of this sector(minor sector in the following case) and r is its radius

Example: Suppose the sector of a circle is 45° and the radius is 4 cm, then the area of the sector will be:
Area = $(\theta/360°) \times \pi r^2$

$= (45°/360°) \times (22/7) \times 4 \times 4$

$= 44/7$ sq. cm

The length of the arc of a sector can be found by using the expression for the circumference of a circle and the angle of the sector, using the following formula:

$$L= (\theta/360°)\times 2\pi r$$

Where θ is the angle of the sector and r is the radius of the circle.

Area of a Triangle

The area of a triangle is,
Area=(1/2)×base×height
If the triangle is equilateral then,
Area **(**√3/4)×a2 where “a” is the side length of the triangle.

Area of a Segment of a Circle

Area of segment APB (highlighted in yellow)
= (Area of sector OAPB) – (Area of triangle AOB)

$=[(\varnothing/360°)\times\pi r2] – [(1/2)\times AB\times OM]$

[To find the area of triangle AOB, use trigonometric ratios to find OM (height) and AB (base)]

Also, the area of segment APB can be calculated directly if the angle of the sector is known using the following formula.

$=[(\theta/360°)\times\pi r2] – [r2\times\sin\theta/2 \times \cos\theta/2]$

Where θ is the angle of the sector and r is the radius of the circle.

Visualizations

Areas of Different Plane Figures

– Area of a square (side l) =l2
– Area of a rectangle =l×b, where l and b are the length and breadth of the rectangle
– Area of a parallelogram =b×h, where “b” is the base and “h” is the perpendicular height.

Area of a trapezium =[(a+b)×h]/2,

where

a & b are the lengths of the parallel sides

h is the trapezium height

The area of a rhombus =pq/2, where p & q are the diagonals.

Benefits of CBSE Class 10 Maths Notes Chapter 12

- Domains Associated with Circles Your Class 10 Notes can help you anticipate the kinds of questions that might be asked on the test.
- For a better comprehension of the subjects, the solutions are divided into several exam portions.
- With our revision notes, you can grasp the subjects more clearly and simply. Our solutions are well-structured and free of errors.