Chapter- 13

Geometry

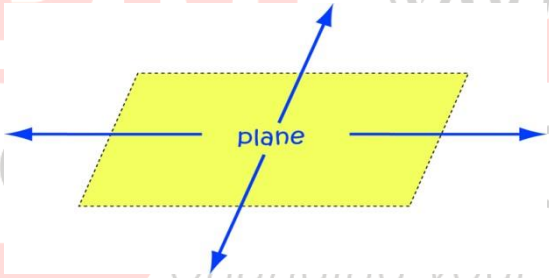
STUDY NOTES

LEARN ABOUT:

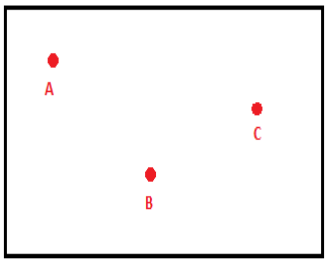
- **Terms used in geometry**
- **Types of straight lines**
- **Circle and parts of circle**
- **Relation between diameter and radius**
- **Symmetry**

❖ TERMS USED IN GEOMETRY-

- **PLANE-** It is a 2-dimensional flat surface and it does not have any thickness.



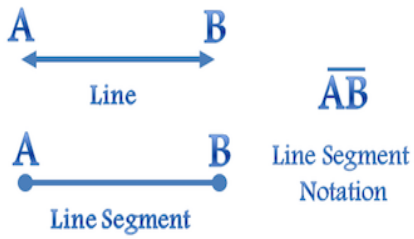
- **POINT-** It is a dot represented on a plane surface. In the figure given alongside, the small dot represents a point. A point shows a definite position. It has no length, breadth and thickness, it has no shape or size. Points are represented by dots and named by using capital letters like A, B, Q, P etc.



- **LINE-** A line has no breadth, no thickness and no end points. It can be extended to any length on both sides. To show this, arrow heads are drawn at each end of the line.

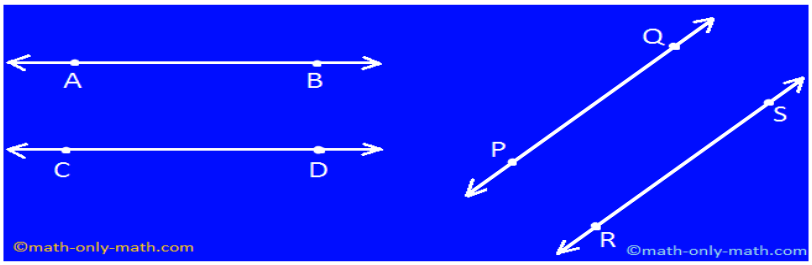
  We can name a line in two ways. We can name it as AB. We can name the line as a single small letter of the alphabet such as m, n, p etc.

- **LINE SEGMENT-** A part of the line is known as the line segment. The part of the line in between points X and Y is known as a line segment. A line segment has two end points. It has a length with no breadth and thickness.

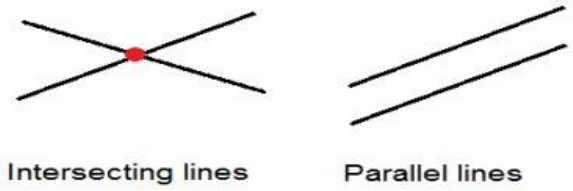


❖ TYPES OF STRAIGHT LINES-

- **PARALLEL LINES-** The lines which do not meet at any point no matter in whatever direction we continue, are known as parallel lines.

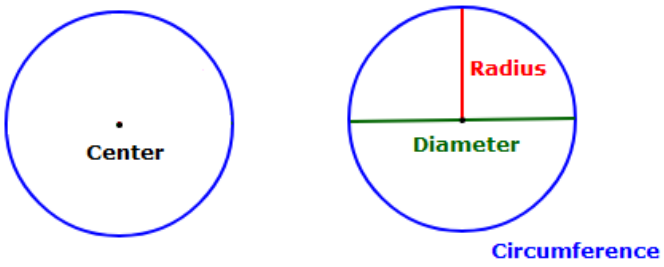


- **INTERSECTING LINES-** The lines or line segments which cross each other at any point are known as intersecting lines. Non-parallel lines are always intersecting lines.



❖ CIRCLE AND PARTS OF THE CIRCLE-

A circle is a closed plane curve with a centre.



- **CENTRE-** It is the fixed point of the circle in the given plane from which every point of the circle in the given plane from which every point on the curve is equidistant.
- **CIRCUMFERENCE-** The length of the boundary of a circle is known as its circumference.
- **RADIUS-** The line joining the centre of the circle to any point on the circumference is known as the radius. It is denoted by R. All the radii of a circle are equal and we can make as many radii as we want in a given circle.
- **DIAMETER-** A straight line which passes through the centre of the circle with its end points lying on its circumference is known as a diameter. It is denoted by D. We can make as many diameters as we want in a circle are always equal in length.

❖ RELATION BETWEEN DIAMETER AND RADIUS-

Diameter = 2 x Radius or Radius = Diameter ÷ 2

D = 2 x R or R = D ÷ 2

EXAMPLE-1

Find the diameter of the circle, if its radius is 7 cm.

SOLUTION-

R = 7 cm

Diameter = 2 x Radius = 2 x R

D = 2 x 7 = 14 cm

EXAMPLE-2

Find the radius of the circle, if its diameter is 20 cm.

SOLUTION-

Diameter = 20 cm

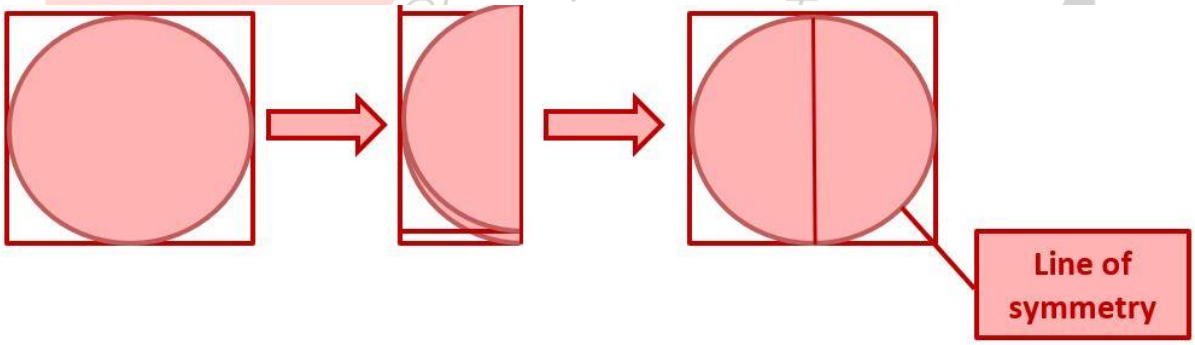
Radius = Diameter ÷ 2

= 20 ÷ 2 = 10 cm

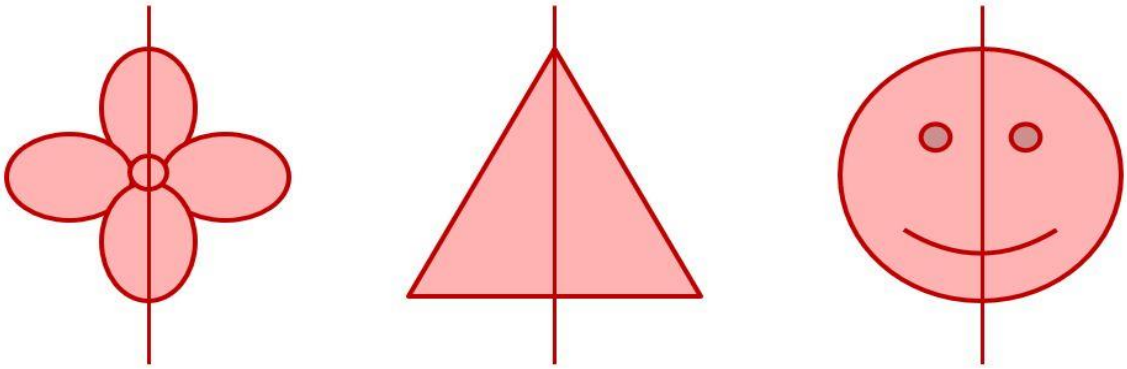
❖ SYMMETRY-

Reflection symmetry or mirror symmetry occurs when a line is drawn to divide a shape in two halves such that each half is a reflection of the other.

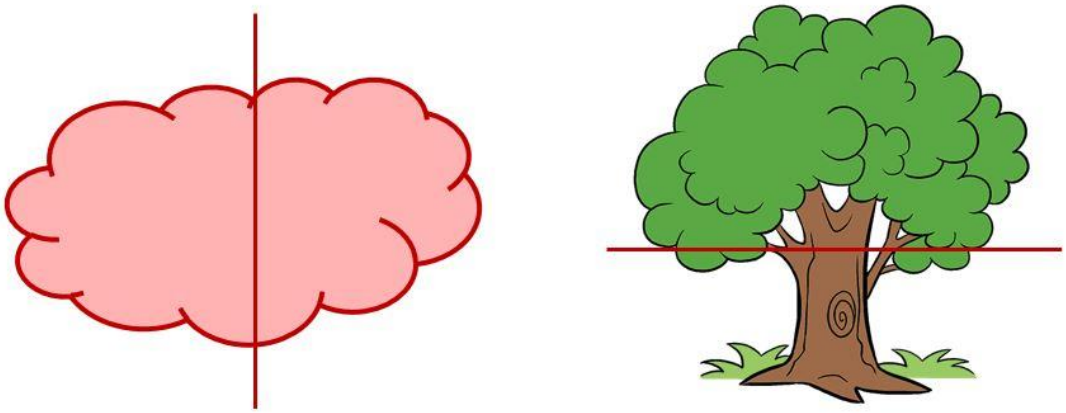
For example, take a circular paper. Fold the paper from the centre. The two halves completely overlap with each other. Thus, we say that a circle shows reflection symmetry.



Look at some more examples given below. You will observe that the left half is a mirror image of the right half and vice – versa. Therefore, these figures are symmetrical figures.



Not all figures are symmetrical. Look at the following examples.



Do these figures show reflection symmetry along the line of symmetry? No, they don't. such figures are **asymmetrical**.

----------X----X----X----------