# Chapter 5

Understanding Elementary Shapes

NOTES:

Introduction:

The chapter "Understanding Elementary Shapes "deals with the measuring of line segments, about angles and its types, about triangles and their classifications, polygons, quadrilaterals, and solid shapes. All the shapes are of different sizes and measures. For measuring all these shapes it is necessary to develop tools to compare their sizes.
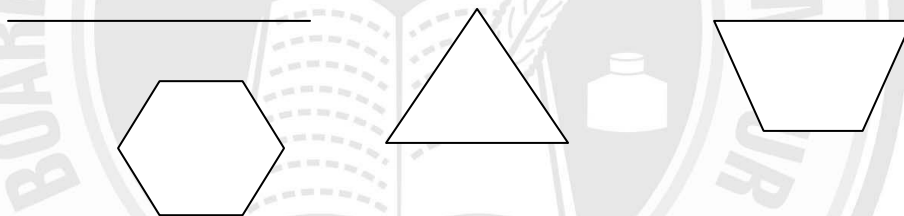
Measuring Line Segments

A line segment is a fixed portion of a line, so it must have some length. We can compare any line segment on the basis of their length.

To compare any two line segments, we find a relation between their lengths. This can be done by following ways.

1. Comparison by observation
2. Comparison by Tracing
3. Comparison using Ruler and Divider

Angles and its types

We can understand the concept of right and straight angles by directions. There are four directions-North, South, East and West.
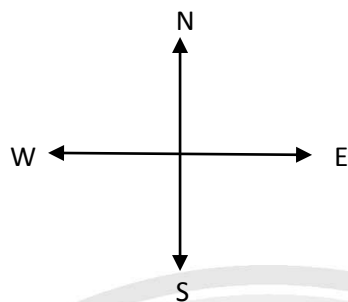
When we turn from North to east then it forms an angle of 90°which is called **right angle**. When we turn from north to south then it forms an angle of 180° which is called **straight angle**. A clockwise turn from North to reach to North again then it forms an angle of 360° which is called **a Complete Angle**. This is called one revolution.

**Acute, Obtuse and Reflex Angles**:

- **Acute angle**: When an angle measure is more than zero degree but less than a right angle, it is called an **acute angle**.

- **Obtuse angle**: When an angle measure more than a right angle but less than a **straight angle**, it is called an obtuse angle.

- **Reflex angle**: When an angle measures more than a straight angle but less than a complete angle, it is called a **reflex angle**.

Measuring Angles:

An angle is measured in "**degrees**". One complete revolution is divided into 360 equal parts so each part is one degree. We write it as 360° and read as "three hundred sixty degrees".

We can measure the angle using a device called **Protractor**.

Perpendicular Lines:

A

C ⌐ D

B
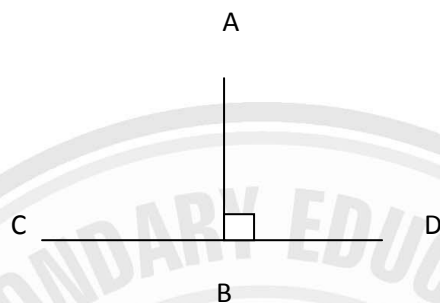
When two lines intersect and the angle between them is a right angle, then the lines are said to be **perpendicular**. In the above figure AB is perpendicular to CD, we write AB ⊥ CD.

Classification of Triangles

- Triangles are those closed figures which have exactly three sides.
- Based on their sides and angles, they can be classified into different triangles.

Triangles based on sides

- Scalene: If all the sides are different then it is called scalene triangle.
- Isosceles: If two sides are equal then it is called isosceles triangle.
- Equilateral: If all the sides are equal then it is called equilateral triangle.

Triangles based on angles

- **Acute-angled triangle**: If all the angles are less than 90˚ then it is called **acute – angled triangle.**
- **Obtuse-angled triangle**: If any one angle is greater than 90˚, then the triangle is called an *obtuse-angled triangle.*
- **Right-angled triangle**: If one of the angles is 90˚ then it is called **right-angled triangle**.

Quadrilaterals

A quadrilateral is a polygon having four sides.
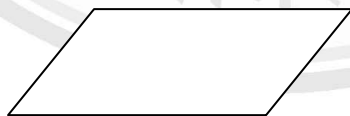
Types of Quadrilaterals

- **Rectangle:** It is a parallelogram of 4 right angles.

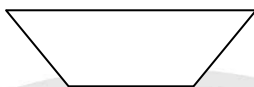- **Square:** It is a rhombus with 4 right angles.

- **Parallelogram:** It is a quadrilateral whose opposite sides are parallel.

- **Rhombus:** It is a quadrilateral having 4 equal sides.

- **Trapezium:** A quadrilateral whose one of the opposite sides are parallel.

Polygons

Any closed figure made up of three or more line segments is called **Polygon**.

We can classify the polygons on the basis of their sides and vertices -

Number of sides	Name of Polygon	Figure
3	Triangle	
4	Quadrilateral	
5	Pentagon	
6	Hexagon	
8	Octagon	

Three Dimensional Shapes

- Three-dimensional shapes are those shapes that can be projected on paper but not drawn on paper.
- These shapes are also called solids.

Faces, Edges and Vertices

- All the flat surfaces of the solid shape are called the **Faces** of that figure.
- The line segment where the two faces meet with each other is called **Edge**.
- The point where the two edges meet with each other is called **Vertex**.