# **Introduction to Lines and Angles**

# Line:

A line is a straight one-dimensional figure, that extends in the opposite directions infinitely. A line can be horizontal or vertical. It can be drawn from left to right or top to bottom.



#### **Properties of Line:**

- Collinear points are a set of three or more points which lie on the same line.
- The points which do not lie on the same line are called non-collinear points.

**Note:** Three points can be either collinear or non-collinear, but not both together at the same time.

### Line Segment:

A line segment is a part of a line that is bounded by two distinct end points, and contains every point on the line between its end points. The length of a line segment can be measured, because it has two distinct end points.

# Ray:

A ray is a part of a line that has a start point and goes off in a particular direction to infinity, but does not have an end point. You can think of a ray as a line segment that's been extended infinitely in one direction. It is named after its endpoint and another point on the ray.

# Angles:

Angles are the shape that is formed when the endpoints of two rays meet at a single point. They are measured in degrees (°) or radians. A complete rotation is equal to an angle of 360 degrees. It is represented by the symbol ' $\angle$ '.



#### Properties of Angles:

- An angle is a figure in which two rays emerge from a common point. This
  point is called the vertex of the angle and the two rays forming the angle are
  called its arms or sides.
- II. An angle which is greater than 180 degrees but less than 360 degrees is called a reflex angle.
- III. If two adjacent angles add up to 180 degrees, they form a linear pair of angles.
- IV. When two lines intersect each other, the two opposite pairs of angles formed are called vertically opposite angles.

**Complementary Angles:** When sum of two angles is of 90°, then angles are known as complementary Angles.

**Supplementary Angles:** When sum of two angles is of 180°, then angles are known as Supplementary Angles.

Acute Angles: An acute angle is an angle that measures less than 90 degrees but greater than 0 degrees. For example, an angle of 45 degrees is an acute angle.

**Right Angle:** A right angle is an angle that measures exactly 90 degrees. A classic example of a right angle is the angle created where two perpendicular lines intersect, like the corners of a square or rectangle.

**Obtuse Angle:** An obtuse angle is an angle that measures more than 90 degrees but less than 180 degrees. An angle of 120 degrees, for example, is an obtuse angle.