

GEOMETRY- FUNDAMENTAL CONCEPTS

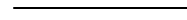
• **A point** is a mark of position, it is neither length nor width nor thickness. So it occupies no space.



• **A line** has only length. It has neither width nor thickness. It has infinite length.



• **A line segment** is a part of a line whose both ends are fixed. It has definite length.



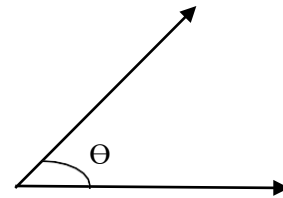
• **A ray** is a part of a line whose one end is fixed and the other end can be extended infinitely.



• **A plane** is a flat surface. It has length and width, but no thickness.

• **The space** is made up of everything which exists in the universe. Every surface etc is a part of space.

• **An angle** is formed when two line segments or two rays have common end point



TYPES OF ANGLES

- **Acute Angle:** $0^\circ < \theta \leq 90^\circ$
- **Right Angle:** $\theta = 90^\circ$
- **Obtuse Angle:** $90^\circ < \theta \leq 180^\circ$
- **Straight Angle:** $\theta = 180^\circ$
- **Reflex Angle:** $180^\circ < \theta \leq 360^\circ$

• **Angles at a point:** Sum of the angles formed at point is equal to 360 degrees

• **Angles on same side of straight line:** Sum of such angles is equal to 180 degrees

• **Adjacent angles:** Two angles are said to be adjacent with common arm and common vertex

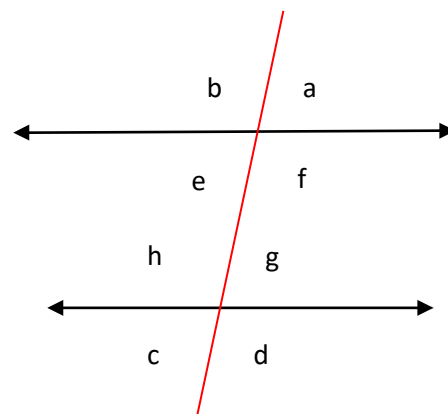
• **Vertically opposite angles(V.O.A):** When two lines intersect four angles formed, pair of angles which lie on opposite sides of point of intersection are V.O.A

• **Complementary angles:** Two angles are said to be complementary if their sum is one right angle (90 degrees). Each angle is complementary of other

• **Supplementary angles:** Two angles are said to be supplementary if their sum is two right angle (180 degrees) Each angle is called supplementary of other

Parallel lines are straight lines which are coplanar and don't intersect each other even when produced on both sides.

Transversal is a straight line that cuts two or more co planar lines.



Condition for parallelism

- **Alternate angles are equal or**
Interior : $\angle e = \angle g$; $\angle f = \angle h$ and
Exterior: $\angle b = \angle d$; $\angle a = \angle c$
- **Corresponding angles are equal or**
 $\angle a = \angle g$; $\angle b = \angle h$; $\angle f = \angle d$; $\angle e = \angle c$
- **Co interior angles are supplementary**
 $\angle e + \angle f = 180^\circ$; $\angle h + \angle g = 180^\circ$;