

Chapter – 6

Lines and Angles

1. Basic Terms and Definitions
2. Intersecting Lines and Non-Intersecting Lines
3. Pairs of Angles
4. Parallel Lines and a Transversal
5. Lines Parallel to the same Line
6. Angle Sum Property of a Triangle

(1) **Point**- We often represent a point by a fine dot made with a fine sharpened pencil on a piece of paper.

(2) **Line**- A line is completely known if we are given any two distinct points. Line AB is represented by as \overleftrightarrow{AB} . A line or a straight line extends indefinitely in both the directions.



(3) **Line segment**- A part (or portion) of a line with two end points is called a line segment.



(4) **Ray**- A part of line with one end point is called a ray.



(5) **Collinear points**- If three or more points lie on the same line, they are called collinear points otherwise they are called non-collinear points.

Types of Angles-

- (1) **Acute angle**- An acute angle measure between 0° and 90°
 - (2) **Right angle**- A right angle is exactly equal to 90°
 - (3) **Obtuse angle**- An angle greater than 90° but less than 180°
 - (4) **Straight angle**- A straight angle is equal to 180°
 - (5) **Reflex angle**- An angle which is greater than 180° but less than 360° is called a reflex angle.
 - (6) **Complementary angles**- Two angles whose sum is 90° are called complementary angles.
 - (7) **Supplementary angle**- Two angles whose sum is 180° are called supplementary angles.
 - (8) **Adjacent angles**- Two angles are adjacent, if they have a common vertex, a common arm and their non-common arms are on different sides of common arm.
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Key Notes

(9) **Linear pair**- Two angles form a linear pair, if their non-common arms form a line.

(10) **Vertically opposite angles**- Vertically opposite angles are formed when two lines intersect each other at a point.

TRANSVERSAL:

(a) Corresponding angles

(b) Alternate interior angles

(c) Alternate exterior angles

(d) Interior angles on the same side of the transversal.

- If a transversal intersects two parallel lines, then
 - (i) each pair of corresponding angles is equal.
 - (ii) each pair of alternate interior angles is equal.
 - (iii) each pair of interior angle on the same side of the transversal is supplementary.
 - If a transversal interacts two lines such that, either
 - (i) any one pair of corresponding angles is equal, or
 - (ii) any one pair of alternate interior angles is equal or
 - (iii) any one pair of interior angles on the same side of the transversal is supplementary then the lines are parallel.
 - Lines which are parallel to a given line are parallel to each other.
 - The sum of the three angles of a triangle is 180°
 - If a side of a triangle is produced, the exterior angle so formed is equal to the sum of the two interior opposite angles.
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