CLASS-7

LESSON-5 LINES AND ANGLES

(This PDF Based on NCERT Book)

LINE(रेखा)-A line is a straight, one-dimensional figure that extends infinitely in both directions. It has length but no width. Think of it as a perfectly straight path that goes on forever

TYPES OF LINE(रेखा के प्रकार):

There are different types of lines based on their position or how they relate to other lines:

- **Straight Line(सरल रेखा):** The most basic type, it's a line that doesn't curve or bend.
- **Horizontal Line(क्षैतिज रेखा):** A straight line that goes from left to right, like the horizon.
- **Vertical Line(ऊर्ध्वाधर रेखा):** A straight line that goes straight up and down, like the side of a tall building.
- **Parallel Lines(समांतर रेखा):** Two or more lines on the same flat surface that are always the same distance apart and will never cross each other, no matter how far they extend. A good example is a set of railway tracks

ANGLE(कोण): An angle is a geometric shape formed by two lines or rays that meet at a common point called a **vertex**.

TYPES OF ANGLES(कोण के प्रकार):

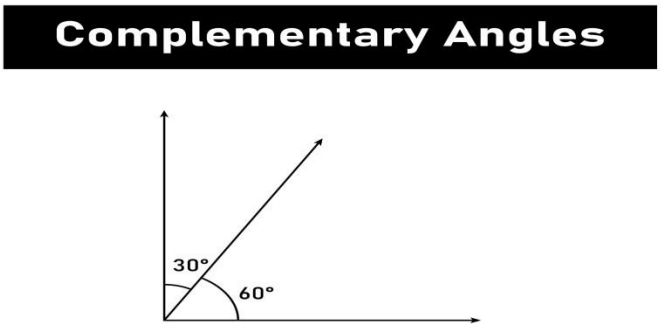
Angles are classified based on their size:

- **Acute Angle(न्यूनकोण):** An angle that measures **less than 90°**. It's a small, sharp angle, like the corner of a slice of pizza.
- **Right Angle(समकोण):** An angle that measures **exactly 90°**. This is a perfect square corner, like the corner of a book or a sheet of paper. It's often marked with a small square at the vertex.
- **Obtuse Angle(अधिक कोण):** An angle that measures **more than 90° but less than 180°**. It's a wide-open angle.
- **Straight Angle(रेखीय कोण):** An angle that measures **exactly 180°**. It forms a straight line
- **Reflex Angle(वृहत्तकोण):** An angle that measures **more than 180° but less than 360°**. It's the "outside" angle of a shape, or more than a straight line.

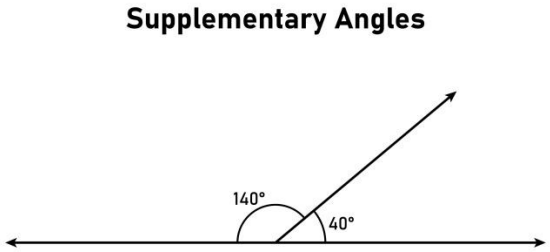
- **Complete Angle(सम्पूर्ण कोण):** An angle that measures **exactly 360°**. It's a complete circle, bringing the line back to where it started.

RELATED ANGLES(संबंधित कोण):

1. **COMPLEMENTARY ANGLE(पूरक कोण):**Complementary angles are two angles that add up to **90°**. For example, a 30° angle and a 60° angle are complementary because 30°+60°=90°. These angles often form a right angle when they are next to each other.



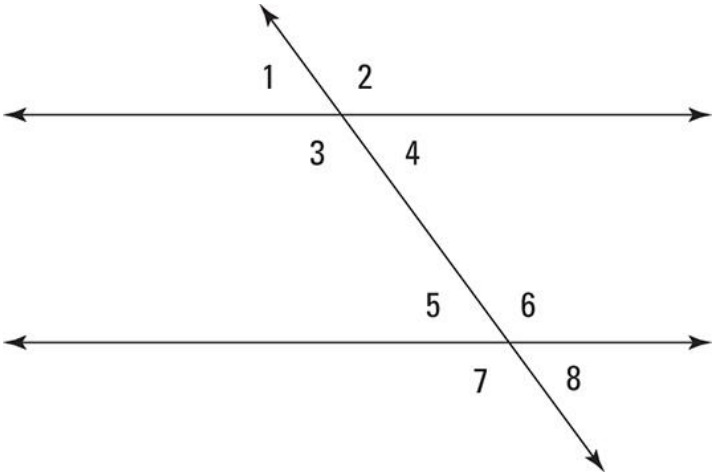
2. **SUPPLEMENTARY ANGLES(संपूरक कोण):**Supplementary angles are two angles that add up to **180°**. For example, a 70° angle and a 110° angle are supplementary because 70°+110°=180°. When placed side by side, these angles form a straight line.



PARALLEL LINE PROPERTIES():

When two parallel lines are crossed by a third line (called a **transversal**), specific angle relationships are created:

- **Corresponding angles(संगत कोण)** are equal. These angles are in the same relative position at each intersection.
- **Alternate interior angles()** are equal. These are the angles on opposite sides of the transversal, located between the parallel lines.
- **Consecutive interior angles** (also called same-side interior angles) are **supplementary**, meaning they add up to 180°. These angles are on the same side of the transversal and are located between the parallel lines



Angle1=Angle5 and Angle2=Angle6 and Angle8=Angle4 and Angle7=Angle3 are **Corresponding Angles.**

Angle4=Angle5 and Angle3=Angle6 are **Alternate interior Angles.**

Angle1=Angle8 and Angle2=Angle7 are **Consecutive interior Angles.**