Lesson 1: Introduction to Parallel Lines

Parallel Lines:

- Definition: Lines that remain the same distance apart and never meet, no matter how far they are extended.
- **Properties**:
    o Always equidistant.
    o Never intersect.
- **Examples in Daily Life**:
    o Railway tracks
    o Edges of a ruler

Activity:

- Draw two parallel lines using a scale and set square.
- Understand the concept of parallelograms.

Parallelogram:

- A four-sided figure with opposite sides parallel and equal in length.
- Opposite angles are equal.

Lesson 2: Lines and Angles

Angles Formed by Intersecting Lines:

- When two lines intersect, they form four angles.
- **Properties**:
    o Two pairs of opposite angles (called vertical angles) are equal.
    o Adjacent angles add up to 180°.

Activity:

- Draw intersecting lines.
- Measure and identify equal and supplementary angles.

Lesson 3: Angles with Parallel Lines

Transversal:

- A line that cuts across two or more (usually parallel) lines.

Angles Formed:

- **Corresponding Angles**: Angles in the same position on the two lines cut by the transversal. They are equal.
- **Alternate Interior Angles**: Angles on opposite sides of the transversal but inside the parallel lines. They are equal.
- **Alternate Exterior Angles**: Angles on opposite sides of the transversal but outside the parallel lines. They are equal.
- **Co-interior Angles (Consecutive Interior Angles)**: Angles on the same side of the transversal and inside the parallel lines. They add up to 180°.

Activity:

- Draw parallel lines and a transversal.
- Identify and color-code different angle pairs.

Lesson 4: Angle Relationships in Parallelograms

Parallelogram Properties:

- Opposite sides are equal and parallel.
- Opposite angles are equal.
- Adjacent angles add up to 180°.

Calculating Angles:

- If one angle is given, use properties to find the others.
- Example: If one angle is 55°, the opposite angle is also 55°, and adjacent angles are 125° each (because 55° + 125° = 180°).

Activity:

- Draw parallelograms and calculate unknown angles.

Lesson 5: Corresponding and Alternate Angles

Corresponding Angles:

- Equal angles that occupy the same relative position at each intersection where a transversal crosses parallel lines.

Alternate Angles:

- **Alternate Interior Angles**: Equal angles on opposite sides of the transversal and inside the parallel lines.
- **Alternate Exterior Angles**: Equal angles on opposite sides of the transversal and outside the parallel lines.

Activity:

- Draw parallel lines and a transversal.
- Identify and measure corresponding and alternate angles.

Lesson 6: Interior and Exterior Angles

Interior Angles:

- Angles inside the parallel lines cut by a transversal.
- **Co-interior Angles**: Angles on the same side of the transversal and inside the parallel lines. They sum to 180°.

Exterior Angles:

- Angles outside the parallel lines cut by a transversal.

Activity:

- Draw parallel lines with a transversal.
- Measure interior and exterior angles.

Lesson 7: Sum of Angles in Triangles

Triangle Angle Sum:

- The sum of the interior angles in any triangle is always 180°.

Activity:

- Draw a triangle and extend one side.
- Draw a parallel line to the extended side through the opposite vertex.
- Measure and calculate the sum of the interior angles.