6.1 Lines and Angles

Learning Objectives:
1. Identify lines, line segments, rays, and angles.
2. Classify angles as acute, right, obtuse, or straight.
3. Identify complementary and supplementary angles.
4. Find measures of angles.

1. Identifying Lines, Line Segments, Rays, and Angles

Definitions:
1. Line—is a set of points extending indefinitely in two directions.
2. Line segment—is a piece of a line with two endpoints.
3. Ray—is a part of a line with one endpoint.
4. Angle—is made up of two rays that share the same endpoint calls vertex.

2. Classifying Angles as Acute, Right, Obtuse, or Straight

Definitions:
1. Acute Angle—is an angle whose measure is between $0^\circ$ and $90^\circ$.
2. Obtuse Angle—is an angle whose measure is between $90^\circ$ and $180^\circ$.
3. Right Angle—is an angle that measure $90^\circ$.
4. Straight Angle—is an angle that measure $180^\circ$.

Example 1. Classify the given angle.

1. 
2. 
3. 

3. Identify Complementary and Supplementary angles

Definitions:
1. Complementary Angle—two angles that have a sum of $90^\circ$.
2. Supplementary Angle—two angles that have a sum of $180^\circ$.

Example 2. Find each complementary or supplementary angle as indicated.
1. Find the complement of a $35^\circ$ angle.

2. Find the supplement of a $152^\circ$ angle.
4. **Finding Measures of Angles**

**Definitions:**
1. **Parallel Lines**—lines that never meet.
2. **Intersecting Lines**—lines that meet at one point.
3. **Perpendicular Lines**—lines that form a right triangle.
4. **Vertical Angles**—angles that have the same measurement.
5. **Adjacent Angles**—angles that share a common side.
6. **Parallel Lines Cut by a Transversal Line**—if two parallel lines are cut by a transversal, then the measures of corresponding angles are equal and the measures of the alternate interior angles are equal.

**Example 3.** Find the measures of angles $x, y,$ and $z$ in each figure.

1. 

   ![Diagram 1](image1)

2. 

   ![Diagram 2](image2)