

# Unit 1

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- **Angles and  
Parallel  
Lines**

# Angles and Parallel Lines

## **MGSE8.G.5:**

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Use informal arguments to establish facts about the angle sum and exterior angle of triangles, when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.

# Remember these words? Write them!!

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**Complementary Angles** – 2 angles that =  $90^\circ$

**Supplementary Angles** – 2 angles that =  $180^\circ$

**Vertical Angles** – 2 angles across the vertex

**Parallel Lines** – 2 lines that never touch

**Congruent** – Geometry word for equal (  $\cong$  )

**What is the angle measure of a straight line?**  $180^\circ$

Think About these words!!

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**Alternate** ~~opposite~~ or

**Consecutive** ~~different~~ or

**Exterior** ~~outside~~ side

**Interior** ~~inside~~

# Transversal

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**Definition:** A line that intersects two or more lines in a plane at different points is called a transversal.

- When a transversal  $t$  intersects line  $n$  and  $m$ , angles of the following types are formed:

Vertical angles

Linear Pairs

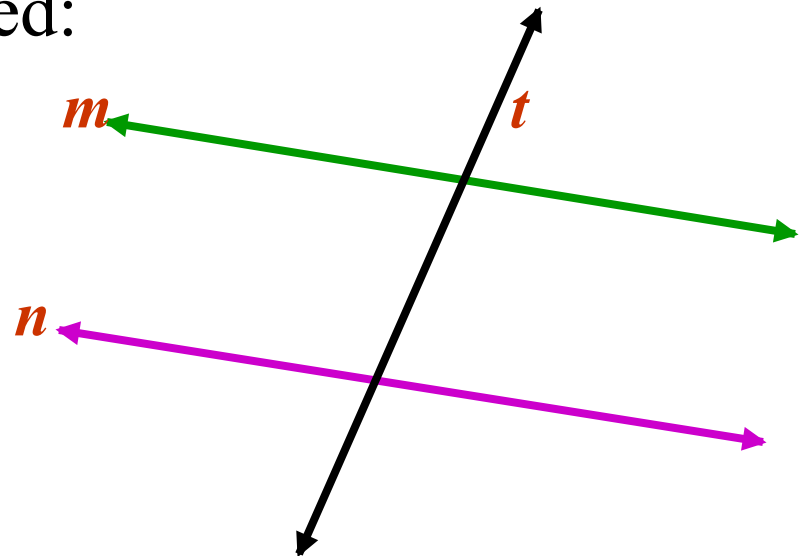
Consecutive interior angles

Alternate interior angles

Consecutive exterior angles

Alternate exterior angles

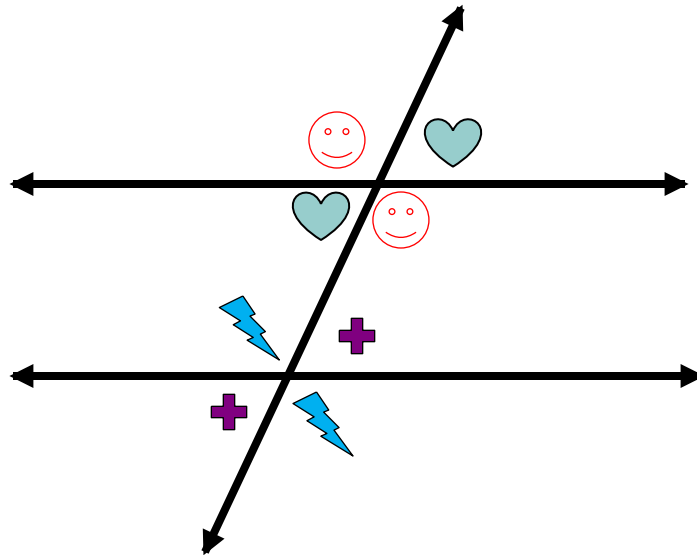
Corresponding angles



# Vertical Angles

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Two angles in the same group that are across the vertex from each other. These angles are congruent.

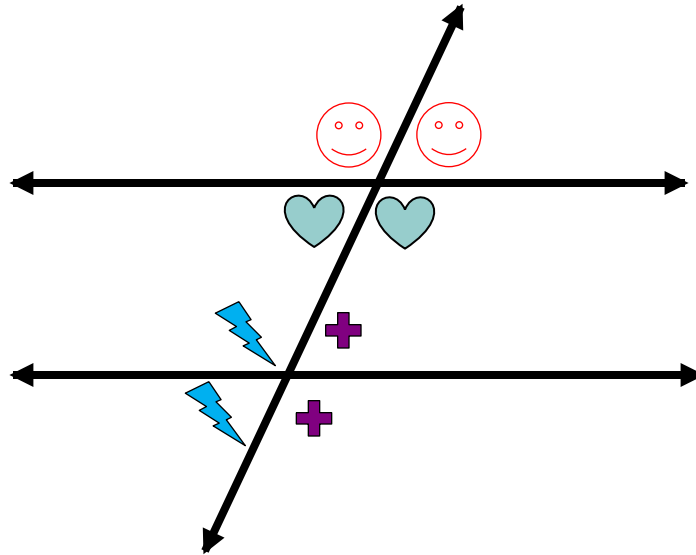


# Linear Pair

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- **Linear Pair:**

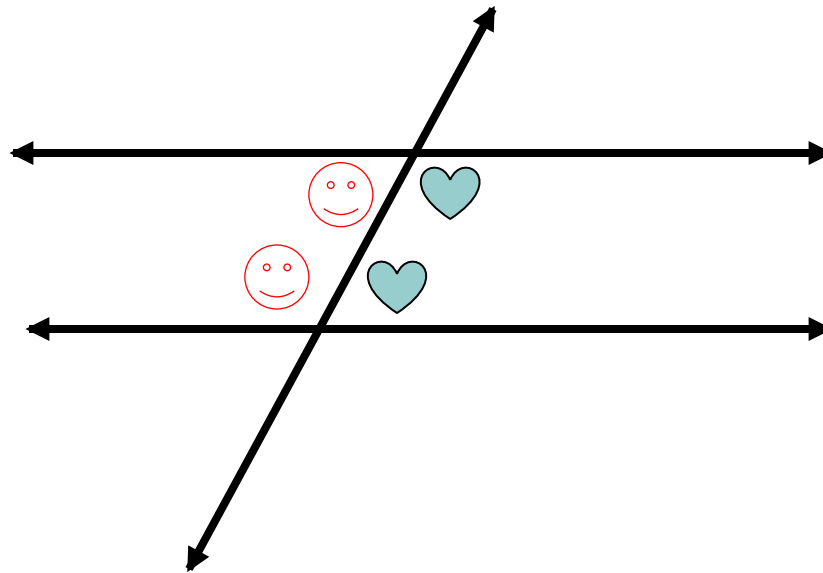
Two angles in the same group that are side-by-side. A Linear Pair is supplementary [angles that form a **line** (sum =  $180^\circ$ )].



# Consecutive Interior Angles

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**Consecutive Interior Angles:** Two angles in a different groups, inside the parallel lines and are on the same side of the transversal. These angles are supplementary ( $=180^\circ$ ).

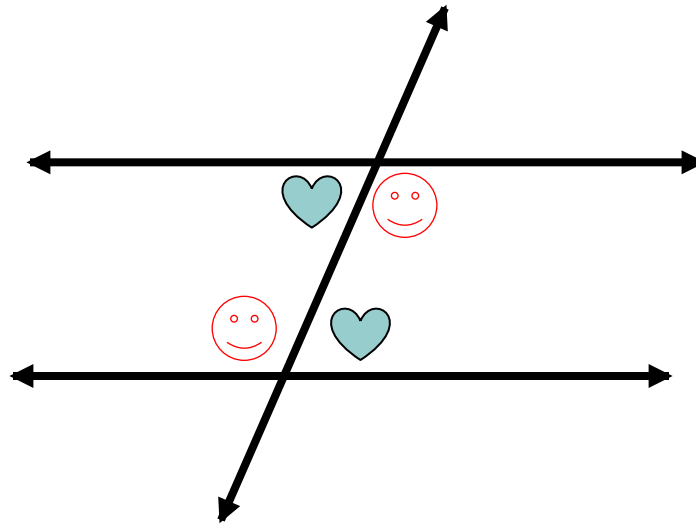




# Alternate Interior Angles

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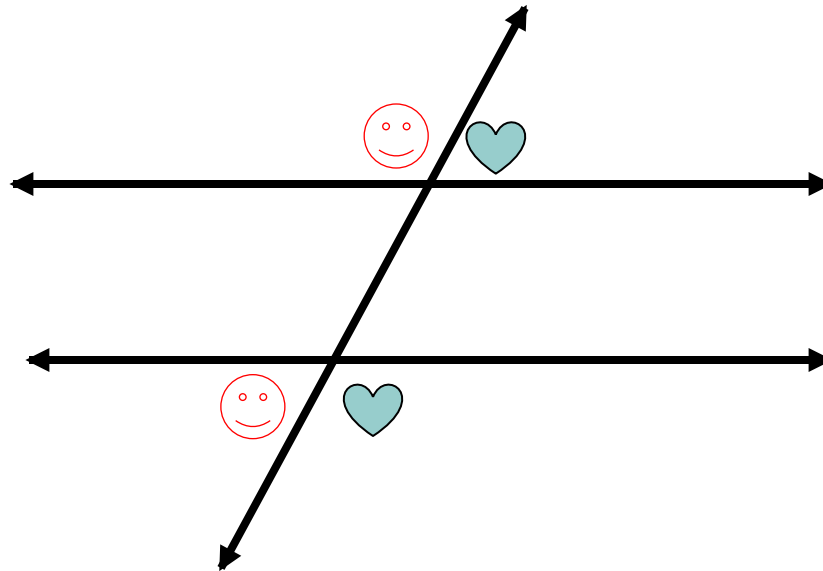
- **Alternate Interior Angles:** Two angles that are in different groups , inside the parallel lines and are on different sides of the transversal. These angles are congruent.



# Consecutive Exterior Angles

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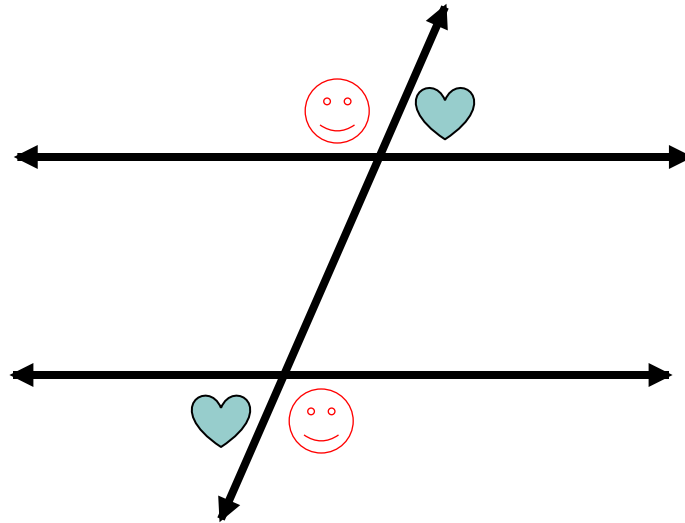
- **Consecutive Exterior Angles:** Two angles in different groups, outside the parallel lines and are on the same side of the transversal. These angles are supplementary ( $= 180^\circ$ ).



# Alternate Exterior Angles

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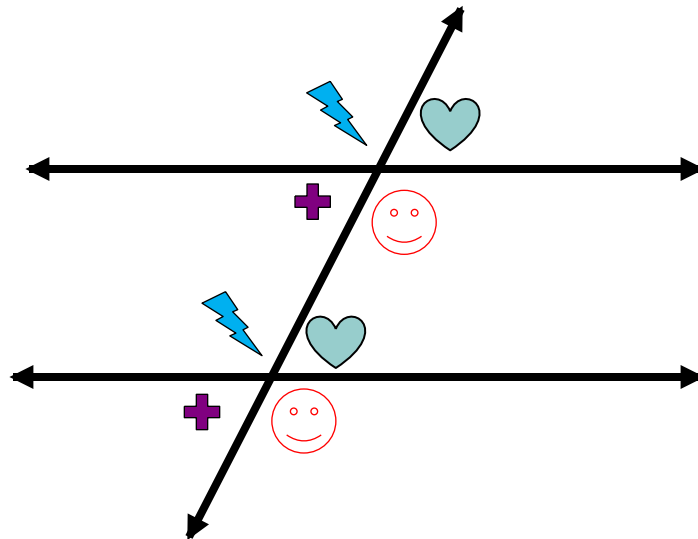
- **Alternate Exterior Angles:** Two angles in different groups, outside the parallel lines and are on different sides of the transversal. The angles are congruent.



# Corresponding Angles

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**Corresponding Angles:** Two angles in different groups, but in the same position in their group. One angle is inside the parallel lines and the other angle is outside of the parallel lines. These angles are congruent.



# Angles and Parallel Lines

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- ⑩ If two parallel lines are cut by a transversal, then the following pairs of angles are **congruent**.
  1. Corresponding angles
  2. Alternate interior angles
  3. Alternate exterior angles
  
- ⑩ If two parallel lines are cut by a transversal, then the following pairs of angles are **supplementary**.
  1. Consecutive interior angles
  2. Consecutive exterior angles
  3. Linear Pair