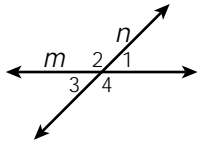


5-1 Geometric Concepts

- ★ **Intersecting** lines meet and form angles. The angles opposite each other are **vertical angles**. They have the same measure.

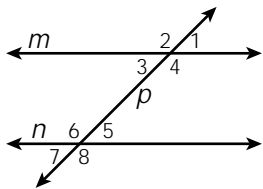


$\angle 1$ and $\angle 3$ are vertical angles. So are $\angle 2$ and $\angle 4$.

Any two adjacent angles formed by intersecting lines are **supplementary**. The sum of their measures equals 180° .

- ★ A **transversal** is a line that intersects two or more lines at different points. When the lines it intersects are parallel, it creates **corresponding angles**. These angles have the same position on different lines and have the same measure.

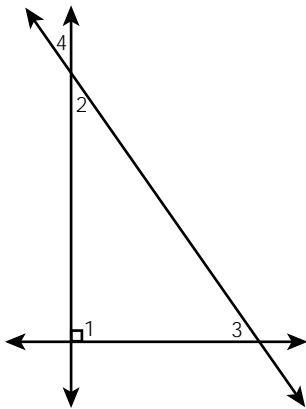
Line p is a transversal of lines m and n .



$\angle 1$ and $\angle 5$ are corresponding angles. So are $\angle 2$ and $\angle 6$, $\angle 3$ and $\angle 7$, and $\angle 4$ and $\angle 8$.

A transversal creates many sets of supplementary angles.

- ★ You can use what you know about different kinds of angles to find the measures of angles in a triangle. The sum of the measures of the angles of a triangle always equals 180° .



$$\angle 1 + \angle 2 + \angle 3 = 180^\circ$$

The square corner in the drawing means $\angle 1$ is 90° .

$$\angle 2 + \angle 3 = 180^\circ - 90^\circ$$

$$\angle 2 + \angle 3 = 90^\circ$$

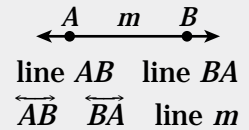
$\angle 2$ and $\angle 4$ are vertical angles, so they have the same measure, 35° .

$$90^\circ - 35^\circ = 55^\circ$$

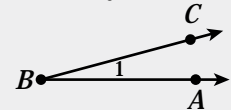
So $\angle 1 = 90^\circ$, $\angle 2 = 35^\circ$, and $\angle 3 = 55^\circ$.

Remember—

A line can be named several ways.



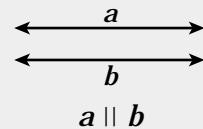
An angle can be named several ways.



angle ABC angle CBA
 $\angle ABC$ $\angle CBA$ $\angle B$
 $\angle 1$ $\angle b$

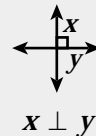
The point naming the vertex is always in the middle.

Parallel lines never meet. They are the same distance apart on the same plane.



The symbol \parallel means *is parallel to*.

Perpendicular lines intersect at right angles.



The symbol \perp means *is perpendicular to*.

Adjacent angles share a vertex and a ray.

Two angles are **complementary** when the sum of their measures equals 90° .