

Unit 2 Theorems and Definitions

Alternate Interior Angles Theorem: If two parallel lines are cut by a transversal, then the alternate interior angles are congruent.

Alternate Exterior Angles Theorem: If two parallel lines are cut by a transversal, then the alternate exterior angles are congruent.

Corresponding Angles Theorem: If two parallel lines are cut by a transversal, then corresponding angles are congruent.

Same-side Interior Angles Theorem: If a transversal intersects two parallel lines, then same side interior angles are supplementary.

Same-side Exterior Angles Theorem: If a transversal intersects two parallel lines, then same side exterior angles are supplementary.

Converse of the Alternate Interior Angles Theorem: If two lines and a transversal form alternate interior angles that are congruent, then the two lines are parallel.

Converse to the Alternate Exterior Angles Theorem: If two lines and a transversal form alternate exterior angles that are congruent, then the two lines are parallel.

Converse to the Corresponding Angles Theorem: If two lines and a transversal form corresponding angles that are congruent, then the two lines are parallel.

Converse to the Same-side Interior Angles Theorem: If two lines and a transversal form same-side interior angles that are supplementary, then the two lines are parallel.

Converse to the Same-side Exterior Angles Theorem: If two lines and a transversal form same-side exterior angles that are supplementary, then the two lines are parallel.

Vertical Angle Theorem: Vertical Angles are congruent

Linear Pair Theorem: If two angles form a linear pair then those angle are supplementary

Definition of **linear pair**: Two angles that are adjacent and supplementary.

Definition **complementary Angles**: Two or more angles where the sum of their measures adds up to 90.

Definition of **supplementary Angles**: Two or more angles where the sum of their measures adds up to 180.

Definition of **vertical Angles**: A pair of non-adjacent angles formed by the intersection of two straight lines

Definition of **right angles**: An angle whose measure is 90.

Definition of **straight angles**: An angle whose measure is 180.

So, if the lines are parallel, what can you conclude about:

Alternate Interior Angles



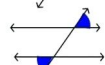
Equal

Same Side Interior Angles



Supplementary

Alternate Exterior Angles



Equal

Same Side Exterior Angles



Supplementary

Corresponding Angles



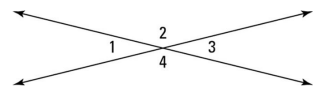
Equal

| | | | |
|----------------------|--|--------------------------------------|-----------------------------------|
| Straight | | One 180° angle | $m\angle S = 180^\circ$ |
| Linear Pair | | Two adjacent angles that add to 180° | $\angle 1 + \angle 2 = 180^\circ$ |
| Supplementary Angles | | two angles that add to 180° | $\angle 1 + \angle 2 = 180^\circ$ |

Vertical Angles Theorem

Vertical Angles are Congruent

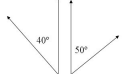
$$\angle 1 \cong \angle 3; \angle 2 \cong \angle 4$$



Complementary angles add up to 90°.



Adjacent and Complementary Angles



Complementary Angles but not Adjacent