

Midterm Exam Supplementary Material

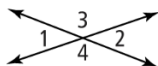
→ Postulate: a statement that is assumed true without proof.

→ Theorem: a true statement that can be proven.

Theorem 7-1 Vertical Angles Theorem

Vertical angles are congruent.

If...



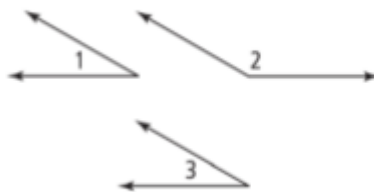
Then... $\angle 1 \cong \angle 2$ and $\angle 3 \cong \angle 4$.

Manipulate the tool on the right and notice the measures of the vertical angles as you manipulate the lines.

Theorem 7-2 Congruent Supplements Theorem

If two angles are supplementary to congruent angles (or to the same angle), then they are congruent.

If... $m\angle 1 + m\angle 2 = 180$ and $m\angle 3 + m\angle 2 = 180$

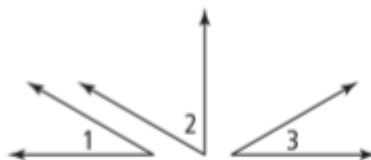


Then... $\angle 1 \cong \angle 3$

Theorem 7-3 Congruent Complements Theorem

If two angles are complementary to congruent angles (or to the same angle), then they are congruent.

If... $m\angle 1 + m\angle 2 = 90$ and $m\angle 3 + m\angle 2 = 90$

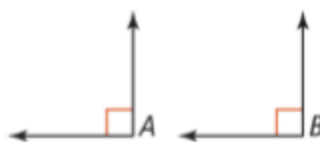


Then... $\angle 1 \cong \angle 3$

Theorem 7-4 Right Angles Theorem

All right angles are congruent.

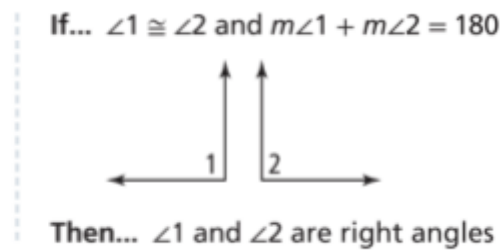
If...



Then... $\angle A \cong \angle B$

Theorem 7-5

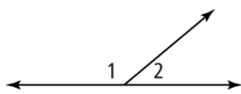
If two angles are congruent and supplementary, then each is a right angle.



Theorem 7-6 Linear Pairs Theorem

The sum of the measures of a linear pair is 180.

If... $\angle 1$ and $\angle 2$ form a linear pair.



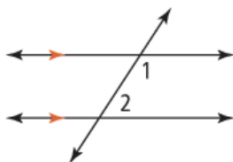
Then... $m\angle 1 + m\angle 2 = 180$.

Use the tool to observe that the measures of the two angles always sum to 180.

Postulate 7-1 Same-Side Interior Angles Postulate

If a transversal intersects two parallel lines, then same-side interior angles are supplementary.

If...

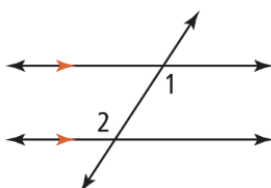


Then... $m\angle 1 + m\angle 2 = 180$

Theorem 7-7 Alternate Interior Angles Theorem

If a transversal intersects two parallel lines, then alternate interior angles are congruent.

If...

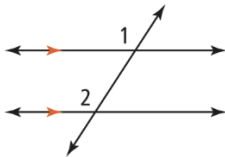


Then... $\angle 1 \cong \angle 2$

Theorem 7-8 Corresponding Angles Theorem

If a transversal intersects two parallel lines, then corresponding angles are congruent.

If...

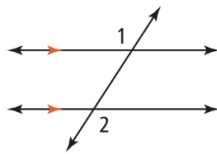


Then... $\angle 1 \cong \angle 2$

Theorem 7-9 Alternate Exterior Angles Theorem

If a transversal intersects two parallel lines, then alternate exterior angles are congruent.

If...

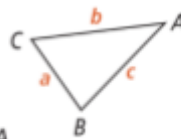


Then... $\angle 1 \cong \angle 2$

Theorem 7-18

If two sides of a triangle are not congruent, then the larger angle lies opposite the longer side.

If... $b > a$

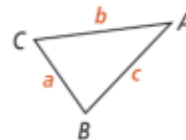


Then... $m\angle B > m\angle A$

Theorem 7-19 Converse of Theorem 7-18

If two angles of a triangle are not congruent, then the longer side lies opposite the larger angle.

If... $m\angle B > m\angle A$

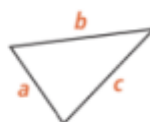


Then... $b > a$

Theorem 7-20 Triangle Inequality Theorem

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

If...



Then... $a + b > c$
 $a + c > b$
 $b + c > a$