Chapter 2
Reasoning and Proofs

2.6 - Proving Geometric Relationships

Theorems

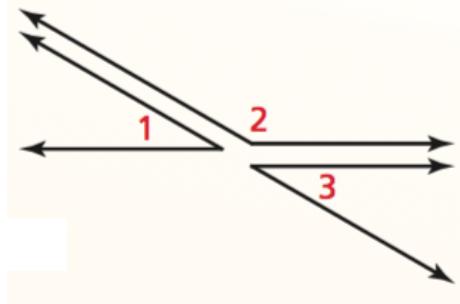| Right Angles Congruence Theorem	All right angles are congruent.

$$\angle 1 \cong \angle 2$$

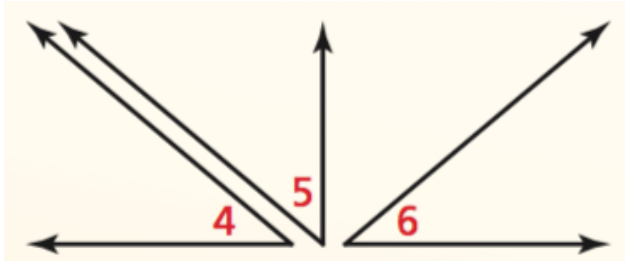| Congruent Supplements Theorem	If two angles are supplementary to the same angle, then they are congruent.

If ∠1 is supplementary to ∠2
and ∠3 is supplementary to ∠2,
then ∠1 ≅ ∠3.

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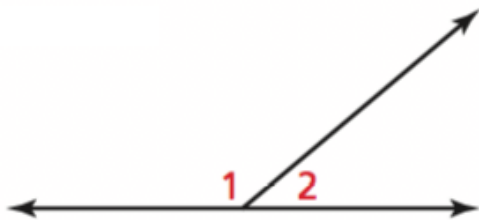
Theorems

Congruent Complements Theorem	If two angles are complementary to the same angle, then they are congruent.

If ∠4 is complementary to ∠5 and ∠6 is complementary to ∠5, then ∠4 ≅ ∠6.

Linear Pair Postulate	If two angles for a linear pair, then they are supplementary.

If ∠1 and ∠2 form a linear pair, then ∠1 and ∠2 are supplementary.

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Theorems

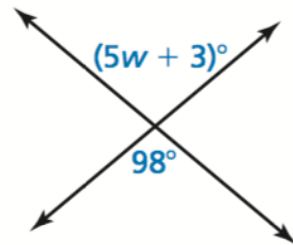| Vertical Angles Theorem	Vertical angles are congruent.
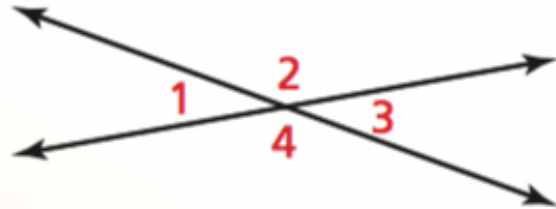
$$\angle 1 \cong \angle 3$$

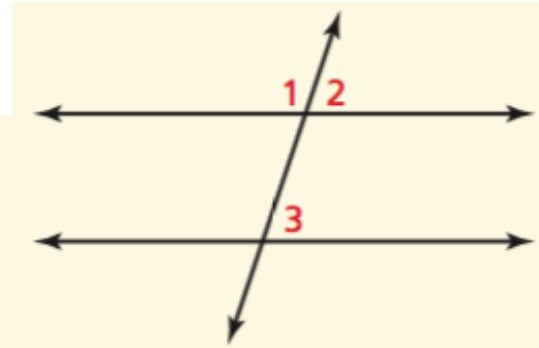$$\angle 2 \cong \angle 4$$

Compute the angles:

1) If m∠1 = 53° above, compute the values of angles 2, 3, and 4.

2) Compute the value of w in the diagram below.

$(5w + 3)°$

$98°$

2.6 - Proving Geometric Relationships

Complete the proof:

Given ∠1 and ∠2 are supplementary.
∠1 and ∠3 are supplementary.
Prove ∠2 ≅ ∠3

Statement   **Reason**
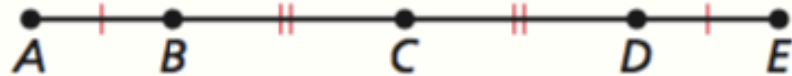
2.6 - Proving Geometric Relationships

Complete the proof:

Given $AB = DE, BC = CD$

Prove $\overline{AC} \cong \overline{CE}$

A———B———C———D———E

STATEMENTS	REASONS
1. $AB = DE, BC = CD$	1. Given
2. $AB + BC = BC + DE$	2. Addition Property of Equality
3. _____	3. Substitution Property of Equality
4. $AB + BC = AC, CD + DE = CE$	4. _____
5. _____	5. Substitution Property of Equality
6. $\overline{AC} \cong \overline{CE}$	6. _____