Name _____ Date _____

LESSON 3.2

Study Guide

For use with pages 153–160

GOAL **Use angles formed by parallel lines and transversals.**

Vocabulary

Postulate 15 Corresponding Angles Postulate: If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.

Theorem 3.1 Alternate Interior Angles Theorem: If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent.

Theorem 3.2 Alternate Exterior Angles Theorem: If two parallel lines are cut by a transversal, then the pairs of alternate exterior angles are congruent.

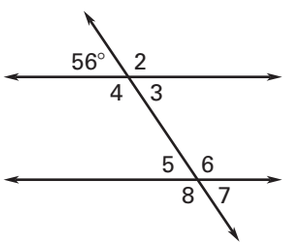
Theorem 3.3 Consecutive Interior Angles Theorem: If two parallel lines are cut by a transversal, then the pairs of consecutive interior angles are supplementary.

EXAMPLE 1 ## Identify congruent angles

The measure of three of the numbered angles is 56°. Identify the angles. *Explain* your reasoning.

Solution

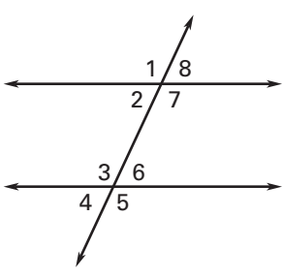
Using the Vertical Angles Congruence Theorem, $m\angle 3 = 56°$. By the Corresponding Angles Postulate, $m\angle 5 = 56°$. Because $\angle 3$ and $\angle 7$ are corresponding angles, by the Corresponding Angles Postulate, you know that $m\angle 7 = 56°$.



Exercises for Example 1

Use the diagram at the right.

1. If $m\angle 2 = 65°$, find three other angles that have a measure of 65°. *Explain* your reasoning.
2. If $m\angle 5 = 115°$, find three other angles that have a measure of 115°. *Explain* your reasoning.



LESSON 3.2

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LESSON 3.2

Study Guide *continued*

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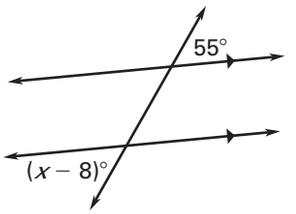
EXAMPLE 2 Use properties of parallel lines

Find the value of *x*.



Solution

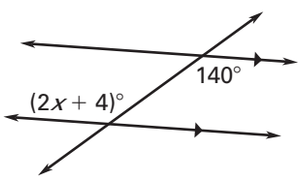
$x - 8 = 55$ Alternate Exterior Angles Theorem

$x = 63$ Add 8 to each side.

Exercises for Example 2

Find the value of x.

3.



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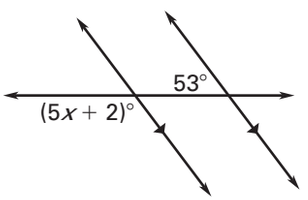

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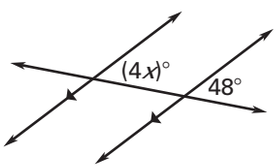

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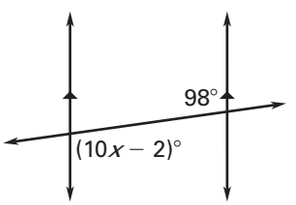

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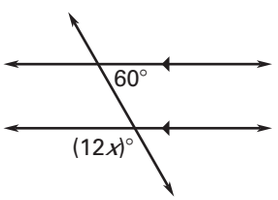

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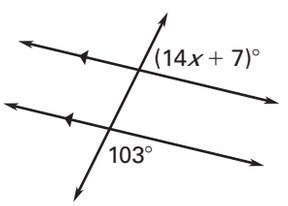

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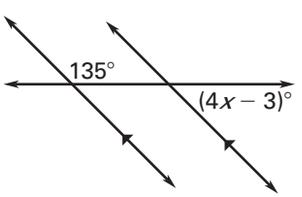

10.