

# Reteaching 3-1

## Properties of Parallel Lines

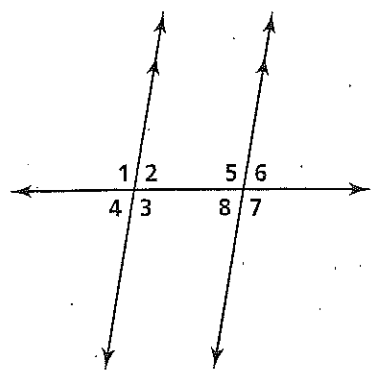
**OBJECTIVE:** Relating the measures of angles formed by parallel lines and a transversal

**MATERIALS:** Ruler, protractor

### Example

If  $m\angle 1 = 100$ , find the measure of each of the other seven angles.

- |   |                           |
|---|---------------------------|
| $m\angle 1 + m\angle 2 = 180; m\angle 2 = 80$ | Supplementary angles      |
| $m\angle 1 + m\angle 4 = 180; m\angle 4 = 80$ | Supplementary angles      |
| $\angle 1 \cong \angle 3; m\angle 3 = 100$    | Vertical angles           |
| $\angle 3 \cong \angle 5; m\angle 5 = 100$    | Alternate interior angles |
| $m\angle 3 + m\angle 8 = 180; m\angle 8 = 80$ | Same-side interior angles |
| $\angle 3 \cong \angle 7; m\angle 7 = 100$    | Corresponding angles      |
| $m\angle 6 + m\angle 7 = 180; m\angle 6 = 80$ | Supplementary angles      |



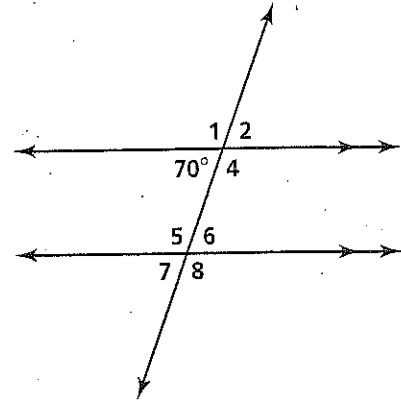
### Exercises

Complete the following to find measures of angles associated with a pair of parallel lines and a transversal.

1. a. Draw a pair of parallel lines using lined paper or the edges of a ruler. Then draw a transversal that intersects the two parallel lines.
- b. Use a protractor to measure one of the angles formed. Record the measure on your drawing.
- c. Find the measures of the other seven angles without measuring.
- d. Verify the angle measures by measuring each with a protractor.

Find the measure of each angle in the diagram at the right.

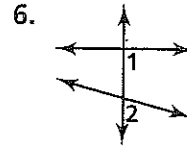
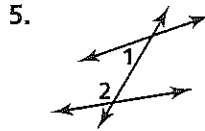
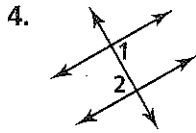
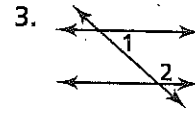
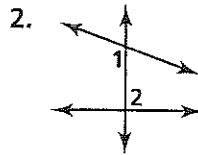
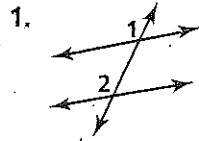
- |                |                |
|----------------|----------------|
| 2. $m\angle 1$ | 3. $m\angle 2$ |
| 4. $m\angle 4$ | 5. $m\angle 5$ |
| 6. $m\angle 6$ | 7. $m\angle 7$ |
| 8. $m\angle 8$ |                |



# Practice 3-1

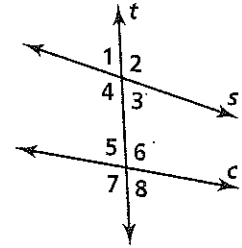
Properties of Parallel Lines

Classify each pair of angles as *alternate interior angles*, *same-side interior angles*, or *corresponding angles*.

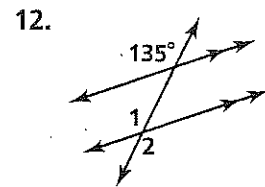
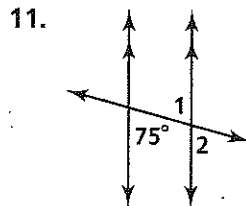
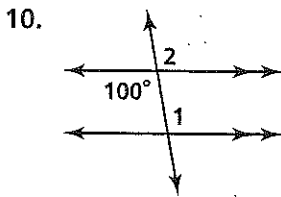


Use the figure on the right to answer Exercises 7–9.

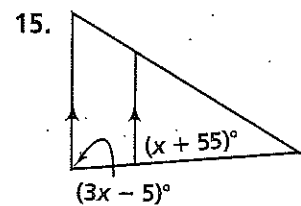
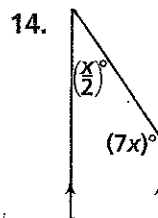
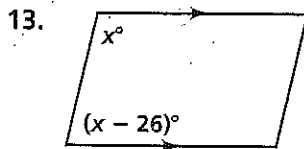
- Name all pairs of corresponding angles formed by the transversal  $t$  and lines  $s$  and  $c$ .
- Name all pairs of alternate interior angles formed by the transversal  $t$  and lines  $s$  and  $c$ .
- Name all pairs of same-side interior angles formed by the transversal  $t$  and lines  $s$  and  $c$ .



Find  $m\angle 1$  and then  $m\angle 2$ . Justify each answer.



**Algebra** Find the value of  $x$ . Then find the measure of each angle.



**16. Developing Proof** Supply the missing reasons in this two-column proof.

Given:  $a \parallel b$   
 Prove:  $\angle 1 \cong \angle 3$

**Statements**

- $a \parallel b$
- $\angle 1 \cong \angle 2$
- $\angle 2 \cong \angle 3$
- $\angle 1 \cong \angle 3$

**Reasons**

- Given
- a. ?
- b. ?
- c. ?

