

Bellringer

- 1.) Classify the relationship between $\angle 1$ and $\angle 5$.

Corresponding

- 2.) Classify the relationship between $\angle 3$ and $\angle 8$.

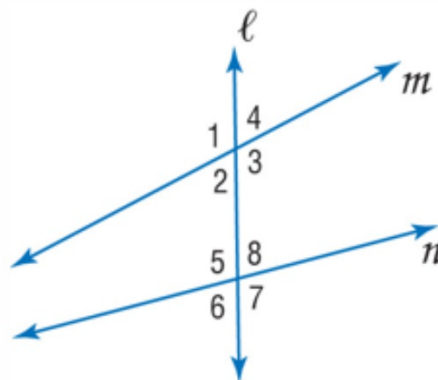
consecutive interior

- 3.) Classify the relationship between $\angle 4$ and $\angle 6$.

alternate exterior

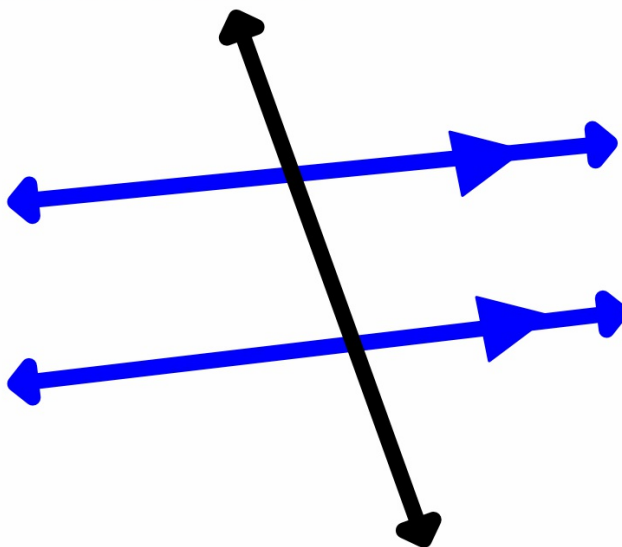
- 4.) Classify the relationship between $\angle 1$ and $\angle 4$

exterior



LESSON 3-2 Angles and Parallel Lines

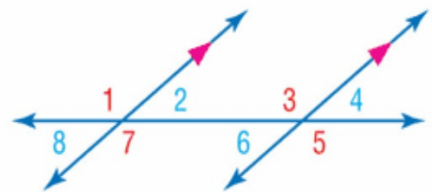
Today, we will be discussing what happens when a transversal intersects two or more parallel lines.



3-2 Angles and Parallel Lines

Postulate 3.1 Corresponding Angles Postulate

When two parallel lines are cut by a transversal, then each pair of corresponding angles is congruent.



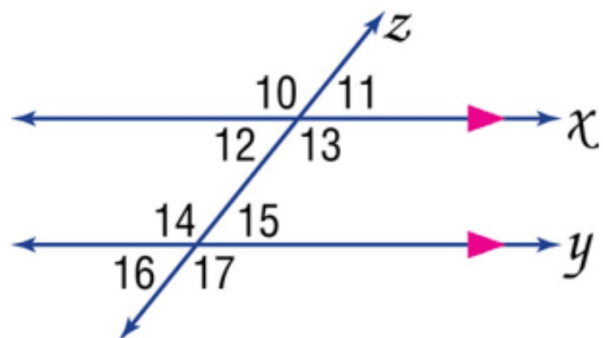
$$\begin{aligned} \angle 1 &\cong \angle 5 & \angle 2 &\cong \angle 6 & \angle 3 &\cong \angle 7 & \angle 4 &\cong \angle 8 \\ \angle 8 &\cong \angle 6 \end{aligned}$$

EXAMPLE 1

Use Corresponding Angles Postulate

A. In the figure, $m\angle 11 = 51$.
Find $m\angle 15$.

$$= 51^\circ$$

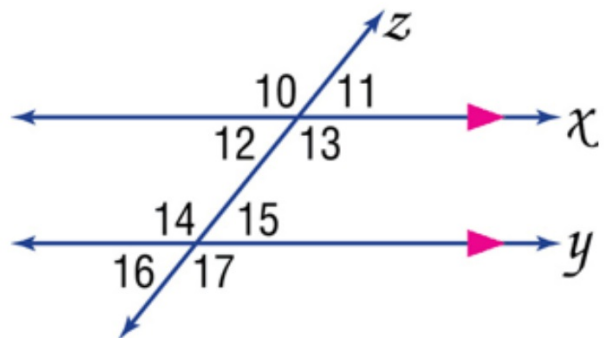


LESSON **3-2** Angles and Parallel Lines

EXAMPLE 1 Use Corresponding Angles Postulate

B. In the figure, $m\angle 11 = 51$.
Find $m\angle 16$.

$$= 51^\circ$$



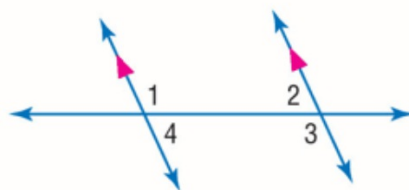
1 Alternate Interior Angles Theorem If two parallel lines are cut by a transversal, then each pair of alternate interior angles is congruent.

Examples $\angle 1 \cong \angle 3$ and $\angle 2 \cong \angle 4$



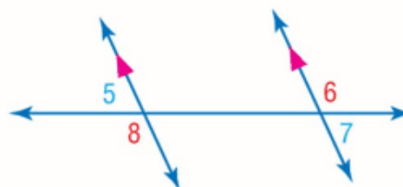
2 Consecutive Interior Angles Theorem If two parallel lines are cut by a transversal, then each pair of consecutive interior angles is supplementary.

Examples $\angle 1$ and $\angle 2$ are supplementary.
 $\angle 3$ and $\angle 4$ are supplementary.



3 Alternate Exterior Angles Theorem If two parallel lines are cut by a transversal, then each pair of alternate exterior angles is congruent.

Examples $\angle 5 \cong \angle 7$ and $\angle 6 \cong \angle 8$



Congruent	Supplementary
<ul style="list-style-type: none"><li data-bbox="242 952 651 1008">-Corresponding<li data-bbox="242 1081 695 1137">-Alternate Interior<li data-bbox="242 1211 716 1267">-Alternate Exterior<li data-bbox="242 1341 453 1397">-Vertical <div data-bbox="261 1480 568 1615" style="border: 1px solid black; height: 60px; width: 192px; margin-top: 10px;"></div>	<ul style="list-style-type: none"><li data-bbox="804 952 1358 1008">- Consecutive Interior<li data-bbox="804 1081 1114 1137">- Linear Pair <div data-bbox="826 1240 1222 1348" style="border: 1px solid black; height: 48px; width: 248px; margin-top: 10px;"></div>

LESSON **3-2** Angles and Parallel Lines



Example 2

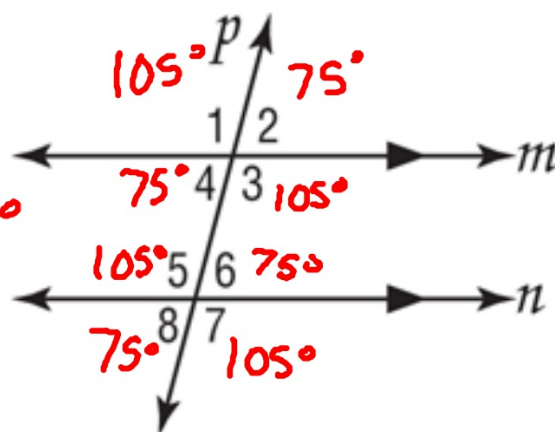
Use Theorems about Parallel

In the figure, $m\angle 2 = 75$.

Find the measures of the remaining angles.

$$\angle 1, \angle 3, \angle 5, \angle 7 = 105^\circ$$

$$\angle 4, \angle 6, \angle 8 = 75^\circ$$



EXAMPLE 3

Find Values of Variables

A. ALGEBRA If $m\angle 5 = 2x - 10$,
and $m\angle 7 = x + 15$, find x .

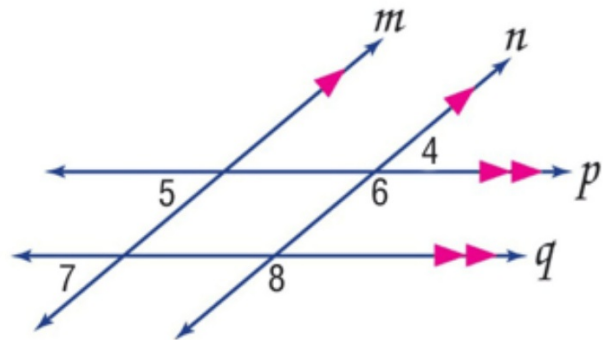
$$2x - 10 = x + 15$$

$$\begin{array}{r} -x \\ -x \end{array}$$

$$x - 10 = 15$$

$$\begin{array}{r} +10 \\ +10 \end{array}$$

$$x = 25$$



EXAMPLE 3

Find Values of Variables

B. ALGEBRA If $m\angle 4 = 4(y - 25)$,
and $m\angle 8 = 4y$, find y .

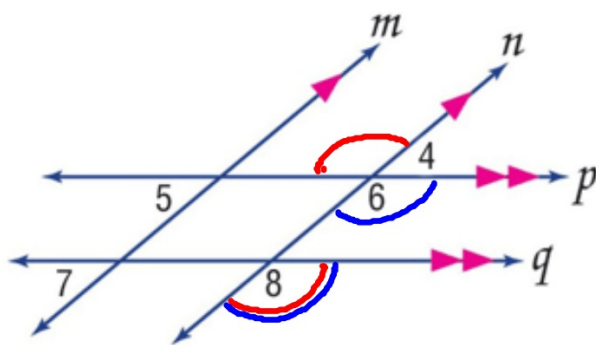
$$4(y - 25) + 4y = 180$$

$$4y - 100 + 4y = 180$$

$$8y - 100 = 180$$
$$+100 +100$$

$$8y = 280$$

$$y = \frac{280}{8} = 35$$



EXAMPLE 4

ALGEBRA If $m\angle 1 = 9x + 6$,
 $m\angle 2 = 2(5x - 3)$, and
 $m\angle 3 = 5y + 14$, find x and y .

$$9x + 6 = 2(5x - 3)$$

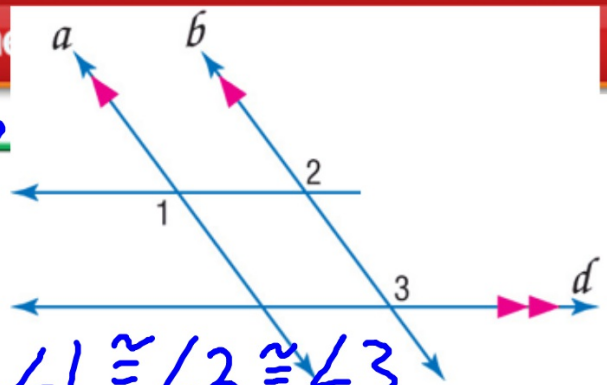
$$9x + 6 = 10x - 6$$

$$\begin{array}{r} -10x \\ -10x \end{array}$$

$$-x + 6 = -6$$

$$\begin{array}{r} -6 \\ -6 \end{array}$$

$$\frac{-x}{-1} = \frac{-12}{-1} \quad \text{so } x = 12$$



$$\angle 1 \cong \angle 2 \cong \angle 3$$

$$5y + 14 = 114$$

$$\begin{array}{r} -14 \\ -14 \end{array}$$

$$5y = 100$$

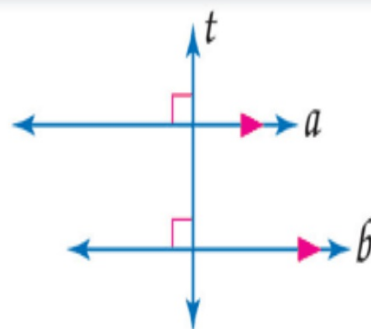
$$y = \frac{100}{5} = 20$$

3-2 Angles and Parallel Lines

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In a plane, if a line is perpendicular to one of two parallel lines, then it is perpendicular to the other.

Examples If line $a \parallel$ line b and line $a \perp$ line t , then line $b \perp$ line t .



In class complete

Skills Practice
1 - 21 ODD.

Assignment.

**Skills Practice
2 - 22 EVEN.**

P #10

