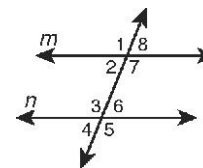


LESSON
14-3

Proving Lines Are Parallel

Practice and Problem Solving: A/B

Use the figure for Problems 1–8. Tell whether lines m and n must be parallel from the given information. If they are, state your reasoning. (*Hint: The angle measures may change for each problem, and the figure is for reference only.*)



1. $\angle 7 \cong \angle 3$

2. $m\angle 3 = (15x + 22)^\circ$, $m\angle 1 = (19x - 10)^\circ$,
 $x = 8$

3. $\angle 7 \cong \angle 6$

4. $m\angle 2 = (5x + 3)^\circ$, $m\angle 3 = (8x - 5)^\circ$,
 $x = 14$

5. $m\angle 8 = (6x - 1)^\circ$, $m\angle 4 = (5x + 3)^\circ$, $x = 9$

6. $\angle 5 \cong \angle 7$

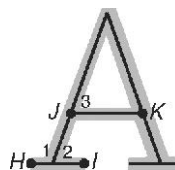
7. $\angle 1 \cong \angle 5$

8. $m\angle 6 = (x + 10)^\circ$, $m\angle 2 = (x + 15)^\circ$

9. Look at some of the printed letters in a textbook. The small horizontal and vertical segments attached to the ends of the letters are called *serifs*. Most of the letters in a textbook are in a serif typeface. The letters on this page do not have serifs, so these letters are in a sans-serif typeface. (*Sans* means “without” in French.) The figure shows a capital letter A with serifs. Use the given information to write a paragraph proof that the serif, segment \overline{HI} , is parallel to segment \overline{JK} .

Given: $\angle 1$ and $\angle 3$ are supplementary.

Prove: $\overline{HI} \parallel \overline{JK}$



LESSON 14-3

Practice and Problem Solving: A/B

1. $m \parallel n$; Conv. of Alt Int. \angle s Thm.
2. $m \parallel n$; Conv. of Corr. \angle s Thm.
3. m and n are parallel if and only if $m\angle 7 = 90^\circ$.
4. $m \parallel n$; Conv. of Same-Side Int. \angle s Thm.
5. m and n are not parallel.
6. $m \parallel n$; Conv. of Corr. \angle s Thm.
7. $m \parallel n$; Conv. of Alt Ext. \angle s Thm.
8. m and n are not parallel.
9. Possible answer: The given information states that $\angle 1$ and $\angle 3$ are supplementary. $\angle 1$ and $\angle 2$ are also supplementary by the Linear Pair Theorem. Therefore $\angle 3$ and $\angle 2$ must be congruent by the Congruent Supplements Theorem. Since $\angle 3$ and $\angle 2$ are congruent, \overline{HI} and \overline{JK} are parallel by the Converse of the Corresponding Angles Theorem.