Name _____ Date _____

If you want to change = to ≅ or ≅ to = > Def. of ≅ (this will be your reason)

LESSON 2.6

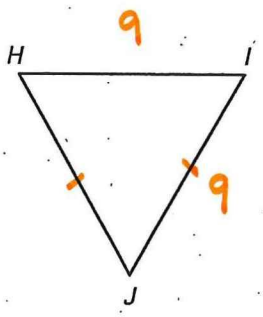
Practice

For use with pages 112–119

In Exercises 1–4, complete the proof.

1. **GIVEN:** $HI = 9, IJ = 9, \overline{IJ} \cong \overline{JH}$

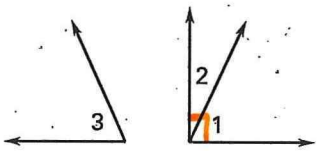
   PROVE: $\overline{HI} \cong \overline{JH}$



Statements	Reasons
1. $HI = 9$	1. Given
2. $IJ = 9$	2. Given
3. $HI = IJ$	3. Substitution
4. $\overline{HI} \cong \overline{IJ}$	4. Definition of congruent segments (Def. of ≅)
5. $\overline{IJ} \cong \overline{JH}$	5. Given
6. $\overline{HI} \cong \overline{JH}$	6. Transitive

2. **GIVEN:** $\angle 3$ and $\angle 2$ are complementary.
   $m\angle 1 + m\angle 2 = 90°$

   PROVE: $\angle 1 \cong \angle 3$



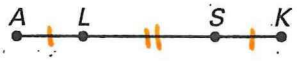
Statements	Reasons
1. $\angle 3$ and $\angle 2$ are complementary.	1. Given
2. $m\angle 1 + m\angle 2 = 90°$	2. Given
3. $m\angle 3 + m\angle 2 = 90°$	3. Def. of complementary ∠s
4. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$ (− m∠2 − m∠2)	4. Substitution
5. $m\angle 1 = m\angle 3$	5. Subtraction
6. $\angle 1 \cong \angle 3$	6. Def. of ≅

Name _____ Date _____

LESSON 2.6 **Practice** *continued*
For use with pages 112–119

3. **GIVEN:** $AL = SK$

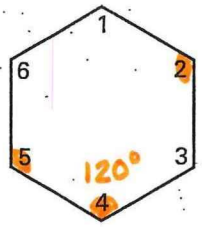
PROVE: $AS = LK$



Statements	Reasons
1. $AL = SK$	1. Given
2. $LS = LS$	2. Reflexive
3. $AL + LS = SK + LS$	3. Addition
4. $AL + LS = AS$	4. SAP
5. $SK + LS = LK$	5. SAP
6. $AS = LK$	6. Substitution

4. **GIVEN:** $m\angle 4 = 120°$, $\angle 2 \cong \angle 5$, $\angle 4 \cong \angle 5$

PROVE: $m\angle 2 = 120°$



Statements	Reasons
1. $m\angle 4 = 120°$, $\angle 2 \cong \angle 5$, $\angle 4 \cong \angle 5$	1. Given
2. $\angle 2 \cong \angle 4$	2. Transitive
3. $m\angle 2 = m\angle 4$	3. Definition of congruent angles Def of $\cong$
4. $m\angle 2 = 120°$	4. Substitution

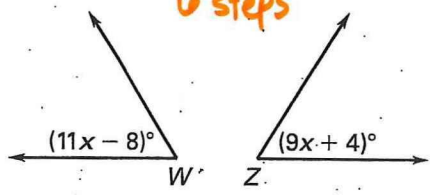
Name _____ Date _____

LESSON 2.6 **Practice** *continued*
For use with pages 112–119

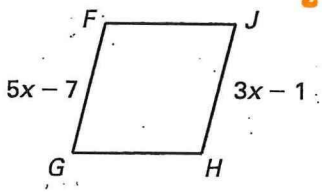
write in a 2 column proof on a separate sheet of paper (next page)

Solve for *x* using the given information. *Explain* your steps.

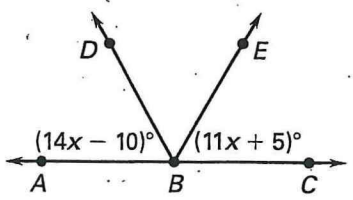
5. $\angle W \cong \angle Z$, Prove: $x = 6$ (6 steps)



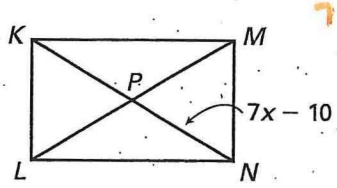
6. $\overline{FG} \cong \overline{FJ}, \overline{FJ} \cong \overline{JH}$, Prove: $x = 3$ (8 steps)



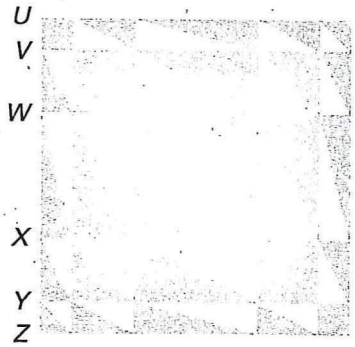
7. $\angle ABD \cong \angle DBE, \angle EBC \cong \angle DBE$, Prove: $x = 5$ (8 steps)



8. $\overline{KP} \cong \overline{PN}, KP = 18$, Prove: $x = 4$ (7 steps)

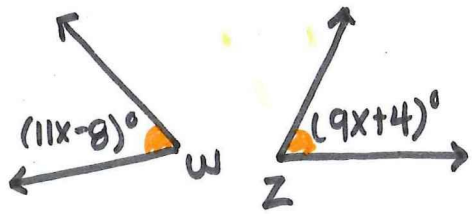


9. Optical Illusion To create the illusion at the right, a special grid was used. In the grid, corresponding row heights are the same measure. For instance, $\overline{UV}$ and $\overline{ZY}$ are congruent. You decide to make this design yourself. You draw the grid, but you need to make sure that the row heights are the same. You measure $\overline{UV}$, $\overline{UW}$, $\overline{ZY}$, and $\overline{ZX}$. You find that $\overline{UV} \cong \overline{ZY}$ and $\overline{UW} \cong \overline{ZX}$. Write an argument that allows you to conclude that $\overline{VW} \cong \overline{YX}$.



5. Given: $\angle W \cong \angle Z$

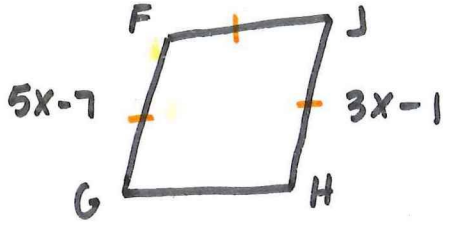
Prove: $x = 6$



Statements	Reasons
1. $\angle W \cong \angle Z$	1. Given
2. $m\angle W = m\angle Z$	2. Def. of $\cong$
3. $11x - 8 = 9x + 4$	3. Substitution
4. $2x - 8 = 4$	4. Subtraction
5. $2x = 12$	5. Addition
6. $x = 6$	6. Division

6. Given: $\overline{FG} \cong \overline{FJ}$, $\overline{FJ} \cong \overline{JH}$

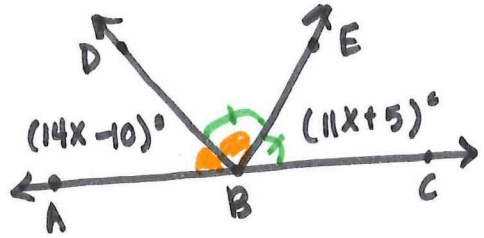
Prove: $x = 3$



Statements	Reasons
1. $\overline{FG} \cong \overline{FJ}$	1. Given
2. $\overline{FJ} \cong \overline{JH}$	2. Given
3. $\overline{FG} \cong \overline{JH}$	3. Transitive
4. $FG = JH$	4. Def. of $\cong$
5. $5x - 7 = 3x - 1$	5. Substitution
6. $2x - 7 = -1$	6. Subtraction
7. $2x = 6$	7. Addition
8. $x = 3$	8. Division

7. Given: $\angle ABD \cong \angle DBE$
$\angle EBC \cong \angle DBE$

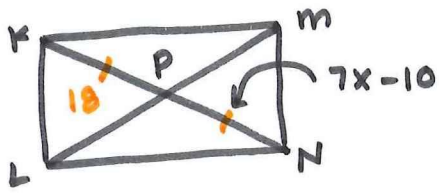
Prove: $x = 5$



Statements	Reasons
1. $\angle ABD \cong \angle DBE$	1. Given
2. $\angle EBC \cong \angle DBG$	2. Given
3. $\angle ABD \cong \angle EBC$	3. Transitive
4. $m\angle ABD = m\angle EBC$	4. Def. of $\cong$
5. $14x - 10 = 11x + 5$	5. Substitution
6. $3x - 10 = 5$	6. Subtraction
7. $3x = 15$	7. Addition
8. $x = 5$	8. Division

8. Given: $\overline{KP} \cong \overline{PN}$, $KP = 18$

Prove: $x = 4$



Statements	Reasons
1. $\overline{KP} \cong \overline{PN}$	1. Given
2. $KP = 18$	2. Given
3. $KP = PN$	3. Def. of $\cong$
4. $18 = 7x - 10$	4. Substitution
5. $28 = 7x$	5. Addition
6. $4 = x$	6. Division
7. $x = 4$	7. Symmetric