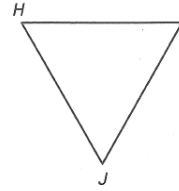


In Exercises 1–4, complete the proof.

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

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

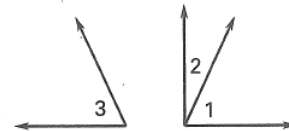


Statements	Reasons
1. $HI = 9$	1. <u>?</u>
2. $IJ = 9$	2. <u>?</u>
3. $HI = IJ$	3. <u>?</u>
4. <u>?</u>	4. Definition of congruent segments
5. $\overline{IJ} \cong \overline{JH}$	5. <u>?</u>
6. $\overline{HI} \cong \overline{IH}$	6. <u>?</u>

2. GIVEN: $\angle 3$ and $\angle 2$ are complementary.

$$m\angle 1 + m\angle 2 = 90^\circ$$

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



Statements	Reasons
1. $\angle 3$ and $\angle 2$ are complementary.	1. <u>?</u>
2. $m\angle 1 + m\angle 2 = 90^\circ$	2. <u>?</u>
3. $m\angle 3 + m\angle 2 = 90^\circ$	3. <u>?</u>
4. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	4. <u>?</u>
5. $m\angle 1 = m\angle 3$	5. <u>?</u>
6. $\angle 1 \cong \angle 3$	6. <u>?</u>

3. GIVEN: $AL = SK$



PROVE: $AS = LK$

Statements

Reasons

1. $AL = SK$

1. ?

2. $LS = LS$

2. ?

3. $AL + LS = SK + LS$

3. ?

4. $AL + LS = AS$

4. ?

5. $SK + LS = LK$

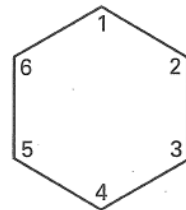
5. ?

6. $AS = LK$

6. ?

4. GIVEN: $m\angle 4 = 120^\circ$, $\angle 2 \cong \angle 5$, $\angle 4 \cong \angle 5$

PROVE: $m\angle 2 = 120^\circ$



Statements

Reasons

1. $m\angle 4 = 120^\circ$, $\angle 2 \cong \angle 5$,
 $\angle 4 \cong \angle 5$

1. ?

2. $\angle 2 \cong \angle 4$

2. ?

3. ?

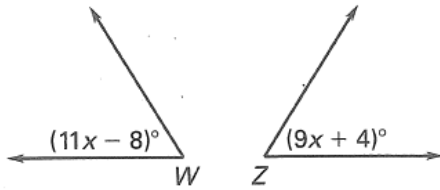
3. Definition of congruent angles

4. $m\angle 2 = 120^\circ$

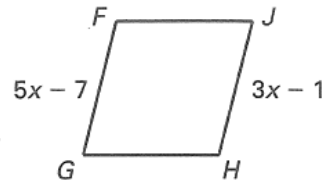
4. ?

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

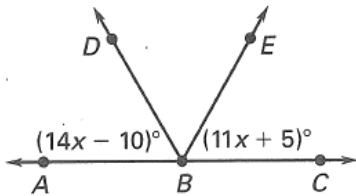
5. $\angle W \cong \angle Z$



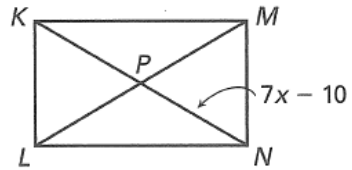
6. $\overline{FG} \cong \overline{FJ}, \overline{FJ} \cong \overline{JH}$



7. $\angle ABD \cong \angle DBE, \angle EBC \cong \angle DBE$



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



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 $\overline{VW} \cong \overline{YX}$.

