

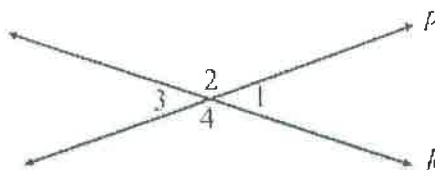
6-5 Parallel Lines Proofs Part 2

Name _____ Date _____

1. Complete the following proof:

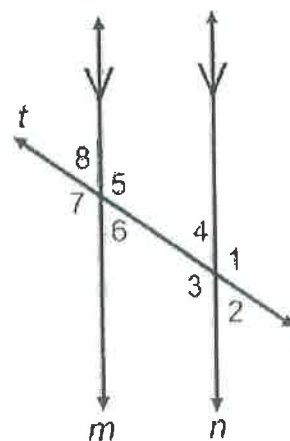
Given: Lines k and p intersect at a given point.

Prove: $m\angle 2 = m\angle 4$



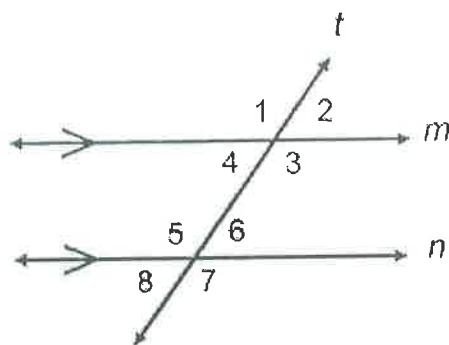
S	R
1) Lines k + p intersect	Given
2) $m\angle 1 + m\angle 2 = 180^\circ$	Linear Pair
3) $m\angle 1 + m\angle 4 = 180^\circ$	Linear Pair
4) $m\angle 1 + m\angle 2 = m\angle 1 + m\angle 4$	<u>Substitution</u> Transitive Property
5) $m\angle 2 = m\angle 4$	Subtraction

2. Given: Line m is parallel to line n with transversal t .
Prove: $m\angle 2 + m\angle 7 = 180^\circ$



- Line $m \parallel n$, t is transversal - Given
- $m\angle 2 + m\angle 3 = 180^\circ$ - Linear Pair
- $m\angle 3 = m\angle 7$ - Corresponding Angles
- $\therefore m\angle 2 + m\angle 7 = 180^\circ$ - Substitution

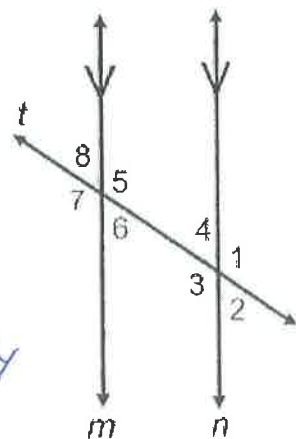
3. Given: Line m is parallel to line n with transversal t .
 Prove: $m\angle 2 + m\angle 5 = 180^\circ$



- $m \parallel n, t$ is transversal - Given
- $m\angle 2 = m\angle 4$ - Vertical Angles
- $m\angle 4 + m\angle 5 = 180^\circ$ - Same-side interior
- $\therefore m\angle 2 + m\angle 5 = 180^\circ$ - Substitution.

→ Re-proving Vertical Angle Theorem

4. Given: Line m is parallel to line n with transversal t .
 Prove: $m\angle 6 = m\angle 8$

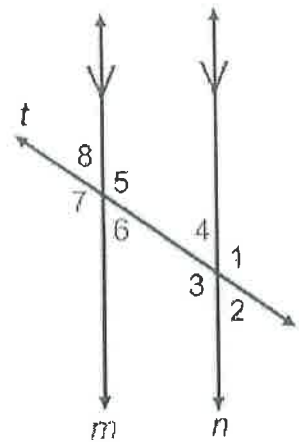


- $m \parallel n, t$ is transversal, - Given
- $m\angle 5 + m\angle 6 = 180^\circ$ - Linear Pair
- $m\angle 5 + m\angle 8 = 180^\circ$ - Linear Pair
- $m\angle 5 + m\angle 6 = m\angle 5 + m\angle 8$ - ~~Substitution~~ Transitive Property
- $\therefore m\angle 6 = m\angle 8$ - Subtraction

Re-prove Alt. Int. Angles

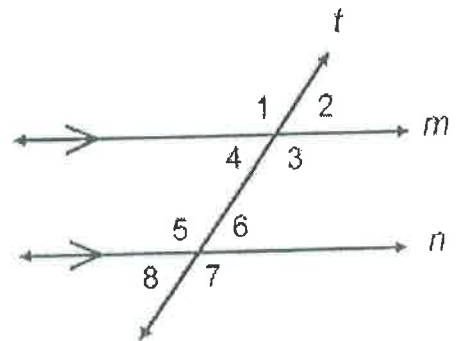
5. Given: Line m is parallel to line n with transversal t .
Prove: $m\angle 3 = m\angle 5$

- $m \parallel n$, t is transversal - Given
- $m\angle 3 = m\angle 7$ - Corresponding Angles
- $m\angle 7 = m\angle 5$ - Vertical Angles
- $\therefore m\angle 3 = m\angle 5$ - ~~Substitution~~
Transitive Property



6. Given: Line m is parallel to line n with transversal t .
Prove: $m\angle 8 + m\angle 3 = 180^\circ$

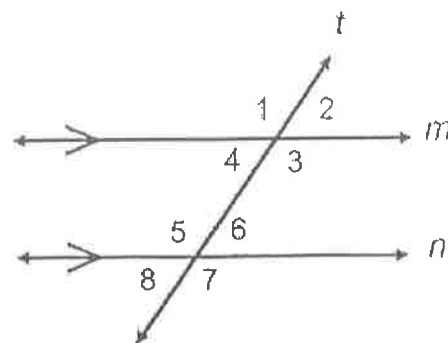
- $m \parallel n$, t is transversal - Given
- $m\angle 8 + m\angle 5 = 180^\circ$ - Linear Pair
- $m\angle 5 = m\angle 3$ - Alternate Interior angles
- $\therefore m\angle 8 + m\angle 3 = 180^\circ$ - Substitution



→ Re-prove same-side interior angles

7. Given: Line m is parallel to line n with transversal t .
Prove: $m\angle 3 + m\angle 6 = 180^\circ$

- $m \parallel n$, t is transversal — Given
- $m\angle 3 = m\angle 7$ — Corresponding Angles
- $m\angle 7 + m\angle 6 = 180^\circ$ — Linear Pair
- $\therefore m\angle 3 + m\angle 6 = 180^\circ$ — Substitution



→ Re-prove Alt. Ext Angles

8. Given: Line m is parallel to line n with transversal t .
Prove: $m\angle 1 = m\angle 7$

- $m \parallel n$, t is transversal — Given
- $m\angle 1 = m\angle 5$ — Corresponding Angles
- $m\angle 5 = m\angle 7$ — Vertical Angles
- $\therefore m\angle 1 = m\angle 7$ — ~~Substitution~~
Transitive Property

