Chapter 3
Parallel and Perpendicular Lines

3.1 - Pairs of Lines and Angles

3.2 - Parallel Lines and Transversals

3.3 - Proofs with Parallel Lines

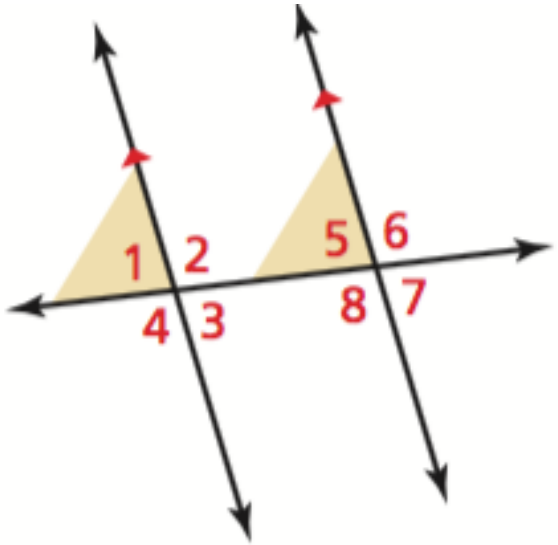
3.4 - Proofs with Perpendicular Lines

3.5 - Equations of Parallel and Perpendicular Lines

3.3 - Proofs with Parallel Lines

Converse of Parallel Line Theorems

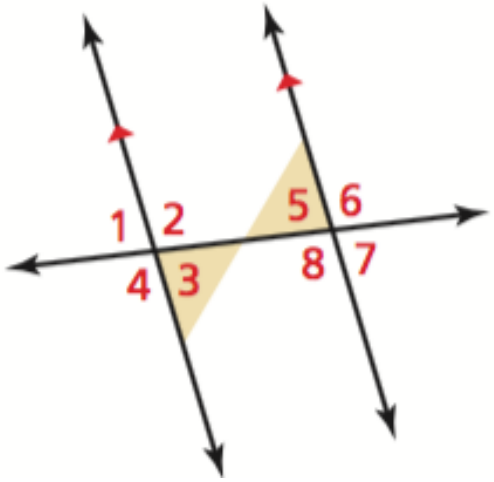
1) Corresponding Angles Theorem	If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.
A) Converse of the Corresponding Angles Theorem	



3.3 - Proofs with Parallel Lines

Converse of Parallel Line Theorems

2) Alternate Interior Angles Theorem	If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent.
B) Converse of the Alternate Interior Angles Theorem	



3.3 - Proofs with Parallel Lines

Converse of Parallel Line Theorems

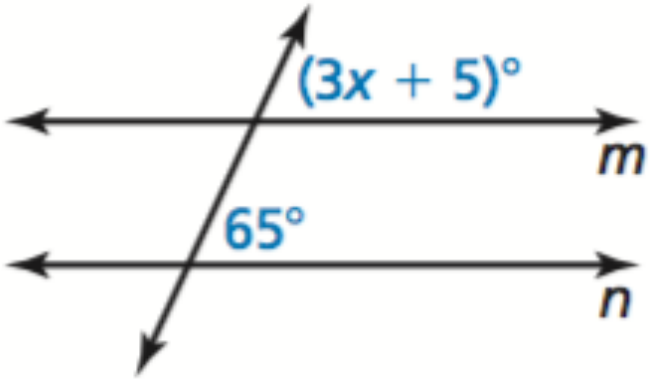
3) Alternate Exterior Angles Theorem	If two parallel lines are cut by a transversal, then the pairs of alternate exterior angles are congruent.
C) Converse of the Alternate Exterior Angles Theorem	

4) Same-side Interior Angles Theorem	If two parallel lines are cut by a transversal, then the pairs of same-side (consecutive) interior angles are supplementary.
D) Converse of the Same-side Interior Angles Theorem	

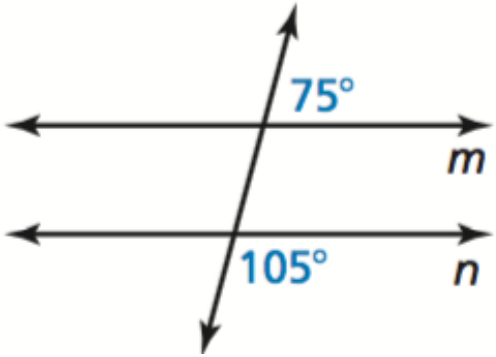
3.3 - Proofs with Parallel Lines

Solve:

1) Compute the value of x that makes m || n.



2) Is there enough evidence to conclude that m || n?

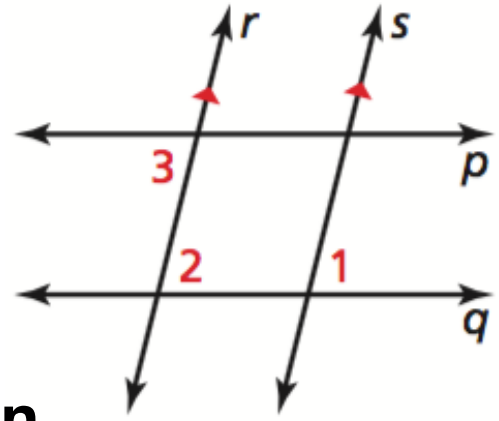


3.3 - Proofs with Parallel Lines

Determine Whether Lines Are Parallel

Given: $r \parallel s$ and $\angle 1 \cong \angle 3$

Prove: $p \parallel q$



Statement **Reason**

3.3 - Proofs with Parallel Lines

Parallel Line Theorems

Transitive Property of Parallel Lines Theorem	If p ‖ q and q ‖ r, then p ‖ r.