

Proving Angle Theorems

Proofs: Showing the steps and reasons to prove a theorem is true.

You can display the steps that prove a theorem in a two-column proof.

Limitations:

Given: $a \parallel b$

Prove: $\angle 1 \cong \angle 3$

what you know

what you must show

deductive steps that connect what you know to what you must show

Statements	Reasons
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____

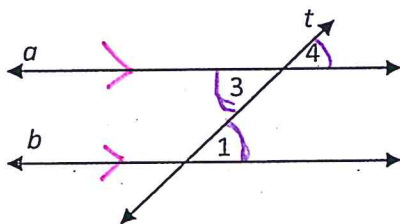
Cannot use the theorem you are trying to prove.

Proof of Theorem 3-1 (Alternate Interior Angles are Congruent)

If a transversal intersects two parallel lines, then alternate interior angles are congruent.

Given: $a \parallel b$ (is parallel to)

Prove: $\angle 1 \cong \angle 3$



Statements

Reasons

* 1.) $a \parallel b$

2.) $\angle 1 \cong \angle 4$

3.) $\angle 3 \cong \angle 4$

4.) $\angle 1 \cong \angle 3$

* 1.) Given.

2.) Since $a \parallel b$, corresponding angles are congruent.

3.) Vertical angles are congruent.

4.) Transitive Property of Congruence. (Substitution)

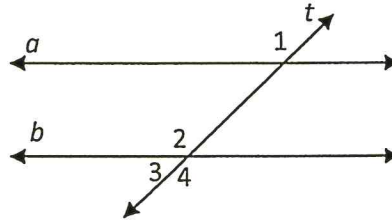
* Always start with given information.

[Last statement should be what you are trying to prove.]

* Transitive Prop. of Congruence: If $a \cong b$ and $a \cong c$, then $b \cong c$.

Ex: $2 \cdot 3 \cong 6$ and $5 + 1 \cong 6$, therefore

$2 \cdot 3 \cong 5 + 1$.

[illegible]