

Common Core Geometry Proof - Lines and Angles_1

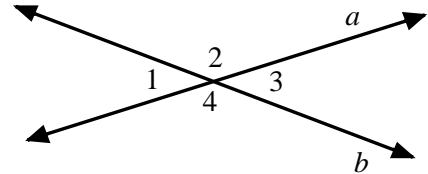
Vertical Angles

Theorem: If two lines intersect, then the vertical angles formed are congruent.

Given: Lines a and b intersect

Diagram:

Prove: $\angle 2 \cong \angle 4$



Statements	Reasons
1. Lines a and b intersect	1. Given
2. $\angle 2$ and $\angle 4$ are vertical angles	2. Definition of Vertical Angles
3. $\angle 1$ & $\angle 2$ and $\angle 1$ & $\angle 4$ form linear pairs	3. Definition of Linear Pair
4. $\angle 1$ & $\angle 2$ and $\angle 1$ & $\angle 4$ are supplementary angles	4. Theorem: If two angles form a linear pair, then they are supplementary angles.
5. $m\angle 1 + m\angle 2 = 180^\circ$ and $m\angle 1 + m\angle 4 = 180^\circ$	5. Definition of Supplementary Angles
6. $m\angle 1 + m\angle 2 = m\angle 1 + m\angle 4$	6. Substitution Axiom
7. $m\angle 2 = m\angle 4$	7. Subtraction Axiom
8. $\angle 2 \cong \angle 4$	8. Definition of Congruent