

Segment & Angle Addition Proofs

Supporting Postulates:

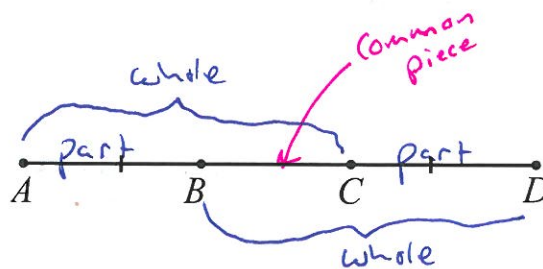
<p>1. Addition If $A = B$, then $A + X = B + X$</p> <p>* note: this is not the same as Segment/angle addition.</p>	<p>2. Subtraction If $A + X = B + X$ then $A = B$.</p>
<p>3. Substitution If $A + B = C$ and $B = X$, then $A + X = C$.</p>	<p>4. Reflexive $A = A$</p>

Addition Proofs:

Example:

Given: \overline{ABCD}
 $\overline{AB} \cong \overline{CD}$ part = part

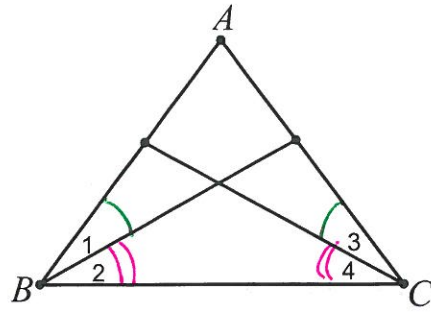
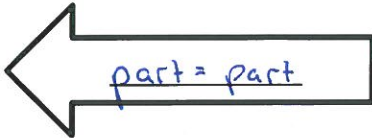
Prove: $\overline{AC} \cong \overline{DB}$ whole = whole



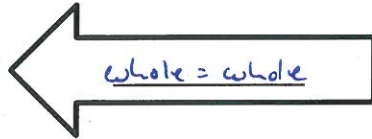
	Statements		Reasons
	1. \overline{ABCD}		1. Given
(Part = Part)	$AB = CD$		
(Part + Part = Part + Part)	2. $AB + BC = CD + BC$	Common piece is being added in to both sides.	2. Addition
(Whole = Whole)	3. $AC = DB$		3. Segment Addition.

Example:

Given: $\angle 1 \cong \angle 3$
 $\angle 2 \cong \angle 4$



Prove: $\angle ABC \cong \angle ACB$

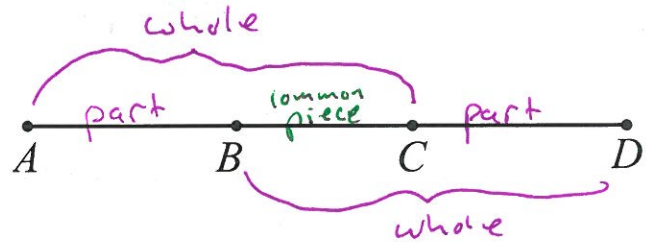
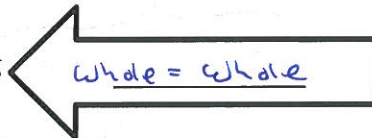


	Statements	Reasons
(Part = Part)	1. $m\angle 1 = m\angle 3$	1. Given.
(Part = Part)	$m\angle 2 = m\angle 4$	
(Part + Part = Part + Part)	2. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	2. Addition.
(Exchange Parts)	3. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	3. Substitution.
(Whole = Whole)	4. $m\angle ABC = m\angle ACB$	4. Angle Addition.

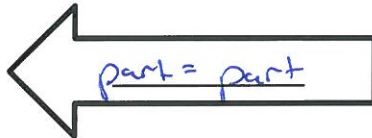
Subtraction Proofs:

Example:

Given: \overline{ABCD}
 $\overline{AC} \cong \overline{DB}$



Prove: $\overline{AB} \cong \overline{CD}$



	Statements	Reasons
	1. \overline{ABCD}	1. Given
(Whole = Whole)	$\overline{AC} = \overline{DB}$	
(Part + Part = Part + Part)	2. $\overline{AB} + \overline{BC} = \overline{CD} + \overline{BC}$	2. Segment Addition.
(Part = Part)	3. $\overline{AB} = \overline{CD}$	3. Subtraction