Lesson 2-7

Flowchart and Paragraph Proofs

Going Deeper

Essential question: *What are some formats you can use to organiz geometric proofs?*

If A, B, C, and D are collinear, as shown in the figure, with $AB = CD$, then $AC = BD$.

Given: $AB = CD$
Prove: $AC = BD$

A Complete the two-column proof.

Statements	Reasons
1. $AB = CD$	1.
2. $BC = BC$	2.
3. $AB + BC = BC + CD$	3.
4. $AB + BC = AC$; $BC + CD = BD$	4.
5. $AC = BD$	5.

REFLECT

2a. A student writes the equation in Step 3 of the proof as $AB + BC = CD + BC$. Explain why the right side of this equation is equivalent to the right side of the equation in the proof.

B Use the two-column proof to write a paragraph proof.

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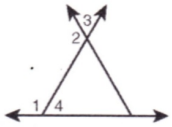
Complete the two-column proof

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

Prove: $m\angle 1 = m\angle 2$



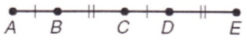
Statements		Reasons
1. $\angle 1$ and $\angle 4$ are supplementary, $\angle 2$ and $\angle 3$ are supplementary.		
2. $\angle 4 \cong \angle 3$		
3.		3. $\cong$ Supps. Thm.
4. $m\angle 1 = m\angle 2$		

Write a paragraph proof for the two column proof to the left

2. Complete the two column proof

Given: $AB = CD$, $BC = DE$

Prove: C is the midpoint of $\overline{AE}$.



Statements		Reasons
1. $AB = CD$, $BC = DE$		
2. $AB + BC = CD + DE$		
3. $AB + BC = AC$, $CD + DE = CE$		
4.		4. Subst.
5. $\overline{AC} \cong \overline{CE}$		5. Def. of $\cong$ segs.
6. C is the midpoint of $\overline{AE}$.		

Write a paragraph proof for the two column proof to the left