



- I can write logical arguments using properties from algebra and geometry.

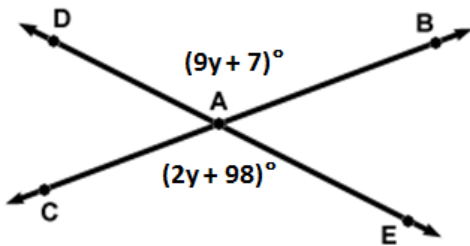
REASON BANK

Addition Property
Alternate Interior Angles Theorem
Alternate Interior Angles Converse Theorem
Alternate Exterior Angles Theorem
Alternate Exterior Angles Converse Theorem
Combine Like Terms
Consecutive Interior Angles Theorem
Consecutive Interior Angles Converse Theorem
Corresponding Angles Postulate
Corresponding Angles Converse Postulate

Division Property
Distributive Property
Given
Linear Pair Postulate
Multiplication Property
Simplification
Substitution Property
Subtraction Property
Transitive Property
Vertical Angles Theorem

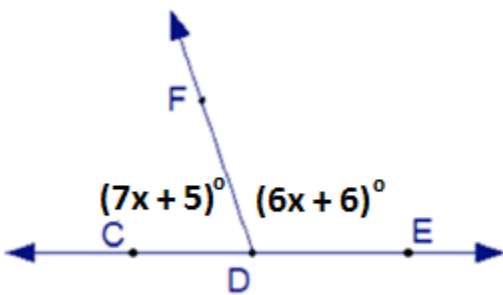
Example 1:

- a. Given the diagram below and $m\angle DAB = (9y+7)^\circ$ and $m\angle CAE = (2y+98)^\circ$, prove that $y = 13$.



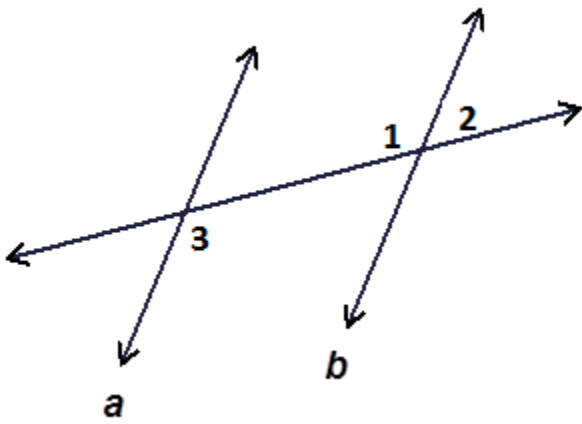
Statements	Reasons
1.	1. Given
2.	2.
3. $7y + 7 = 98$	3. Subtraction Prop.
4.	4.
5. $y = 13$	5.

- b. Given the diagram below, $m\angle FDC = (7x+5)^\circ$ and $m\angle FDE = (6x+6)^\circ$, prove that $m\angle FDE = 84^\circ$.



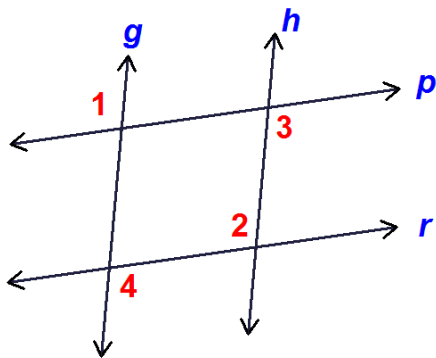
Statements	Reasons
1. $m\angle FDC = (7x+5)^\circ$, $m\angle FDE = (6x+6)^\circ$	1.
2.	2.
3.	3. Combine Like Terms
4.	4.
5. $x = 13$	5.
6.	6. Substitution
7. $m\angle FDE = 84^\circ$	7.

Example 2: Given $m\angle 2 = 50^\circ$ and $m\angle 3 = 130^\circ$, Please prove $a \parallel b$.



Statements	Reasons
1.	1.
2. $m\angle 1 + 50^\circ = 180^\circ$	2.
3.	3. Subtraction Property
4. $a \parallel b$	4.

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



Statements	Reasons
1) <u>$\angle 1 \cong \angle 3$</u>	1) _____
2) <u>$g \parallel h$</u>	2) _____
3) <u>$\angle 2 \cong \angle 4$</u>	3) _____

Example 4:

a. If $AB = 8$, and $8 = CD$, then _____.

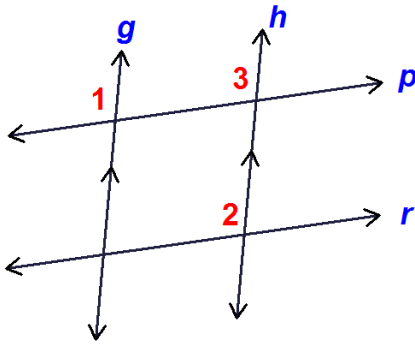
b. If $\overline{AB} \parallel \overline{CD}$ and $\overline{EF} \parallel \overline{CD}$, then _____.

To complete these statements, you used the _____ Property.

_____ Property: If $a = b$ and $b = c$, then $a = c$.

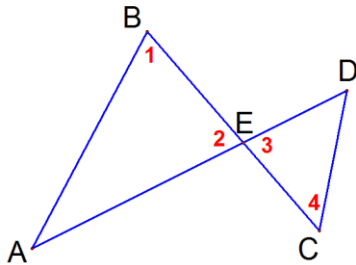
Example 5: Using the Transitive Property in Proofs

- a. Given: $g \parallel h$ and $\angle 1 \cong \angle 2$
 Prove: $p \parallel r$



Statements	Reasons
1) $g \parallel h$	1) _____
2) $\angle 1 \cong \angle 3$	2) _____
3) $\angle 1 \cong \angle 2$	3) _____
4) $\angle 2 \cong \angle 3$	4) _____
5) $p \parallel r$	5) _____

- b. Given: $\angle 1 \cong \angle 2$ and $\angle 3 \cong \angle 4$
 Prove: $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$



Statements	Reasons
1) $\angle 1 \cong \angle 2$	1) _____
2) $\angle 2 \cong \angle 3$	2) _____
3) $\angle 3 \cong \angle 4$	3) _____
4) $\angle 1 \cong \angle 4$	4) _____
5) $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$	5) _____