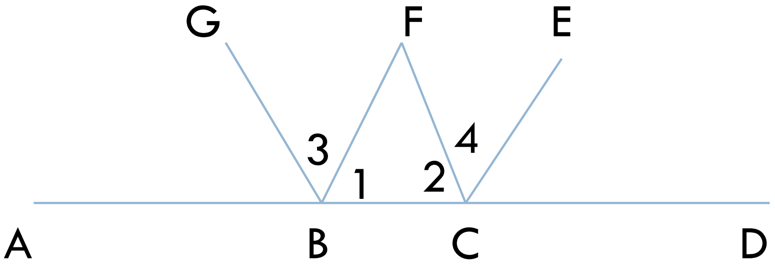
WARM UP

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

BG bisects <ABF

CE bisects < FCD

Prove: $\angle 3 \cong \angle 4$



THE ANSWER!!

Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. Given
2. BG bisects <ABF	2. Given
3. CE bisects < FCD	3. Given
4. <1 supp <ABF	4. If the sum of 2 <s forms a st <, then the <s are supplementary
5. <2 supp <FCD	5. Same as 4
6. $\angle ABF \cong \angle FCD$	6. Supplements of congruent <s are congruent
7. $\angle 3 \cong \angle 4$	7. Division Property

ADVANCED GEOMETRY SECTION 2.7

Transitive and Substitution Properties

Objective

- I can solve problems and write proofs involving the Transitive and Substitution Properties.

Theorem: Transitive Property

- If two angles (or segments) are congruent to the same angle (or segment), then they are congruent to each other.
- Example:

  If $\angle A \cong \angle B and \angle B \cong \angle C, then \angle A \cong \angle C.$

Theorem: Transitive Property

- If angles (or segments) are congruent to congruent angles (or segments), then they are congruent to each other.
- Example:

$$If\ \angle A \cong \angle C, \angle B \cong \angle C, and\ \angle B \cong \angle D,$$
$$then\ \angle A \cong \angle B and\ \angle A \cong \angle D.$$

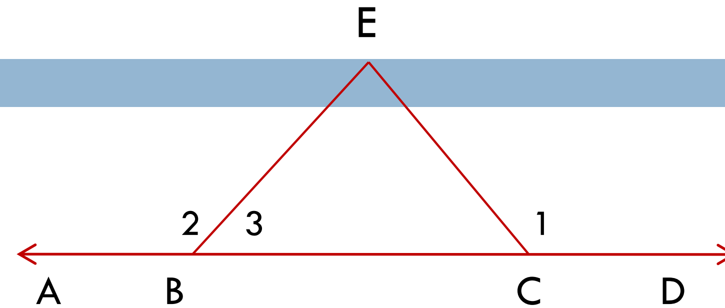
Substitution Property

- Replace one angle with another.
- Use with complementary and supplementary angles.

- Example: If $\angle 1$ is comp to $\angle 2$ and $\angle 2 \cong \angle 3$, then $\angle 1$ is comp to $\angle 3$.

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

Conclusion: $\angle 1$ is supp $\angle 3$



Statements	Reasons
1 $\angle 1 \cong \angle 2$	1 Given
2 $\angle 2$ Supp to $\angle 3$	2 Sum to 180°
3 $\angle 1$ supp to $\angle 3$	3 Substitution Prop

Homework

- P. 97 #3 – 5, 10, 12