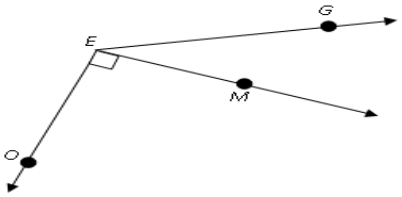
Name: _____ Date: _____

UNIT 3 **LESSON 12**

AIM: HOW DO WE PROVE TRIANGLES CONGRUENT USING THE SUBTRACTION PROPERTY?

Do Now: If $\overline{WY} = \overline{XZ} = 10$ and $\overline{XY} = 4$, what can you conclude about $\overline{WX}$ and $\overline{YZ}$?

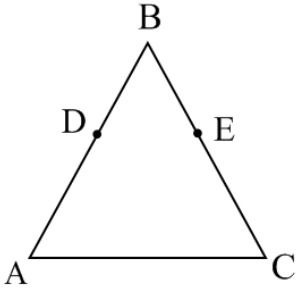
WHAT IS THE SUBTRACTION PROPERTY?

SEGMENT	ANGLE
 $\overline{AB} = \overline{AC} - \overline{BC}$ $\overline{BC} = \overline{AC} - \overline{AB}$	 $\measuredangle GEM = \measuredangle GEO - \measuredangle MEO$ $\measuredangle MEO = \measuredangle GEO - \measuredangle GEM$

WHAT CAN YOU CONCLUDE?

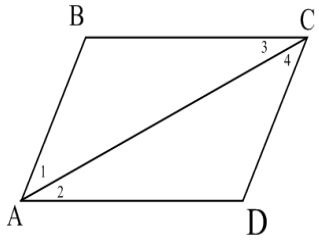
Given: *AB = CB*
BD = EB

Prove: *AD = EC*



Given: $m\angle BAD = m\angle BCD$
$m\angle 2 = m\angle 3$

Prove: $m\angle 1 = m\angle 4$



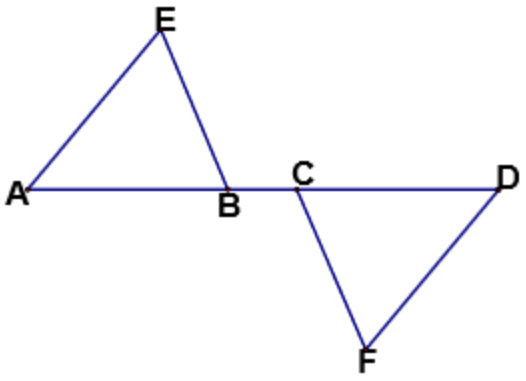
EXAMPLE #1:

Given: $\overline{AE} \cong \overline{DF}$

$\overline{AC} \cong \overline{DB}$

$\measuredangle A \cong \measuredangle D$

Prove: $\Delta AEB \cong \Delta DFC$



STATEMENT	REASON

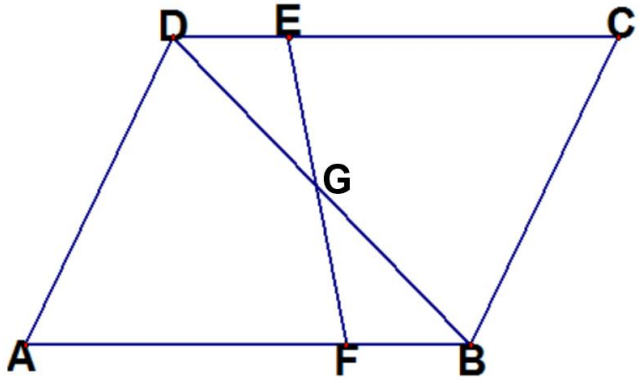
EXAMPLE #2:

Given: $\overline{DC} \cong \overline{AB}$

$\overline{EC} \cong \overline{AF}$

$\overline{AB} \parallel \overline{DC}$

Prove: $\Delta EGD \cong \Delta FGB$



STATEMENT	REASON

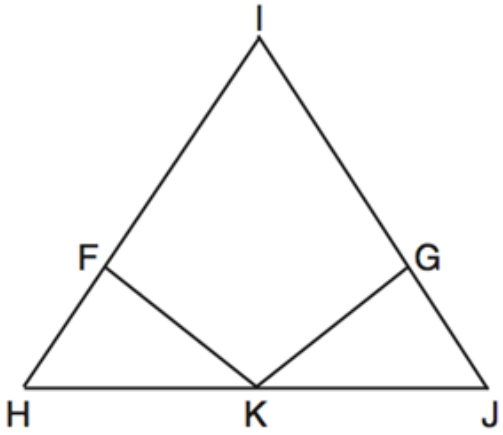
Name: _____ Date: _____

UNIT 3 **LESSON 12**

HOMEWORK

1. Given: $\overline{IH} \cong \overline{IJ}$
   $\overline{IF} \cong \overline{IG}$
   $K \text{ is the midpoint of } \overline{HJ}$

   Prove: $\Delta HFK \cong \Delta JGK$



HINT: Look for an isosceles triangle

STATEMENT	REASON

2. In $\triangle ABC$, $\overline{BD}$ is the perpendicular bisector of $\overline{ADC}$. Based upon this information, which statements below can be proven? *(HINT: Sketch it out and mark diagram!)*

I. $\overline{BD}$ is a median.

II. $\overline{BD}$ bisects $\angle ABC$.

III. $\triangle ABC$ is isosceles.

(1) I and II, only

(2) I and III, only

(3) II and III, only

(4) I, II, and III

3. Based on the triangle markings, which pair of triangles is congruent?

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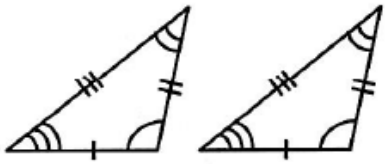

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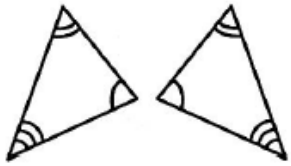

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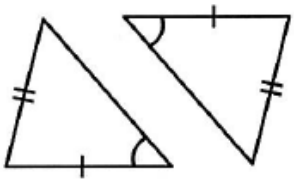

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