NAME: _____ SECTION: _____

LESSON 4: THE HINGE THEOREM AND ITS CONVERSE



I. OBJECTIVES

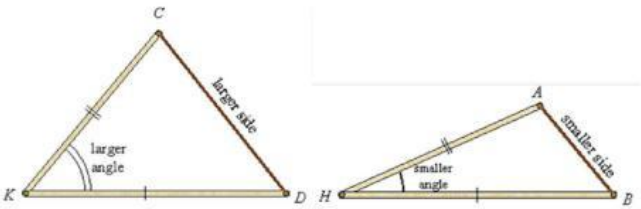
The learner illustrates theorems on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem). ***M8GE-IVa-1***

- The learner compares two triangles using the Hinge theorem and its converse.



II. LESSON

Hinge Theorem If two sides of one triangle are congruent respectively to two sides of a second triangle, and the included angle of the first triangle is larger than the included angle of the second, then the third side of the first triangle is longer than the third side of the second.

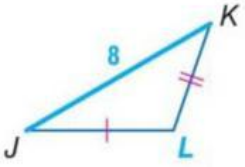


Congruent sides: $\overline{KC} \cong \overline{HA}$

$\overline{KD} \cong \overline{HB}$

$If\ m\angle K > m\angle H, then\ CD > AB.$

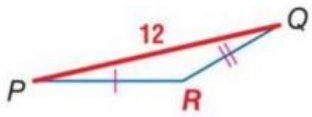
Converse of Hinge Theorem If two sides of one triangle are congruent to two sides of another triangle, but the third side of the first triangle is longer than the third side of the second, then the included angle of the first triangle is larger than the included angle of the second.



$\overline{JL} \cong \overline{PR}$

$\overline{KL} \cong \overline{QR}$

$\overline{JK} < \overline{PQ}$

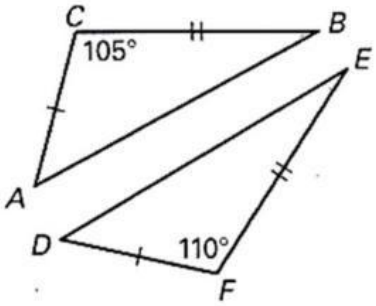


$\angle L < \angle R$



III. ACTIVITY

I. Given the two triangles, ΔABC and ΔDEF answer the following questions.

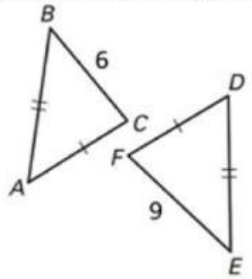


1. Which side is congruent to $\overline{AC}$? ____
2. Which side is congruent to $\overline{CB}$? ____

3-4. Complete the statement by writing >, <, or =.

If	$\angle C$		$\angle F$	$, then$	$\overline{AB}$		$\overline{DE}$

II. Given the two triangles, ΔABC and ΔDEF answer the following questions.



1. Which side is congruent to $\overline{DE}$? ____
2. Which side is congruent to $\overline{DF}$? ____

3-4. Complete the statement by writing >, <, or =.

If	$\overline{EF}$		$\overline{BC}$	$, then$	$\angle D$		$\angle A$



-MTSC-

LIVEWORKSHEETS