Section 5.6 Inequalities in Two Triangles

Complete the outline as you view Video Lecture 5.6. Pause the video as needed to fill in the blanks. Then press Play to continue. Also, circle your answer to each numbered exercise.

Objective 1 Use the Hinge Theorem and Its Converse to Compare Measures of Sides and Angles of Two Triangles

The Hinge Theorem (SAS Inequality Theorem)

<table>
<thead>
<tr>
<th>Theorem</th>
<th>If...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>If two sides of one triangle are congruent to two sides of another triangle, and the included angles are not congruent, then the longer third side is opposite the larger included angle.</td>
<td>$m\angle A &gt; m\angle B$</td>
<td>$BC &gt; FG$</td>
</tr>
</tbody>
</table>

Converse of the Hinge Theorem (SSS Inequality Theorem)

<table>
<thead>
<tr>
<th>Theorem</th>
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</tr>
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<tbody>
<tr>
<td>If two sides of one triangle are congruent to two sides of another triangle, and the third sides are not congruent, the larger included angle is opposite the longer third side.</td>
<td>$BC &gt; FG$</td>
<td>$m\angle A &gt; m\angle E$</td>
</tr>
</tbody>
</table>

For the Hinge Theorem and its converse, we must have two sides of one triangle $\cong$ to two sides of another triangle.
Work Video Exercise 1 with me.
Fill in each blank with <, >, or =.
1. \( FD \underline{\_\_}\ BC \)

Work Video Exercise 2 with me.
Fill in each blank with <, >, or =. \textit{Hint}: We are not using the Hinge Theorem here. We have two congruent triangles.
2. \( m\angle 1 \underline{\_\_\_}\ m\angle 2 \)

Pause and work Video Exercise 3.
Fill in each blank with <, >, or =. \textit{Hint}: These are not congruent triangles since \( 23 \text{ cm} \neq 25 \text{ cm} \).
3. \( m\angle 1 \underline{\_\_}\ m\angle 2 \)

Play and check.
Work Video Exercise 4 with me.

Find the range of possible values for each variable.

4.