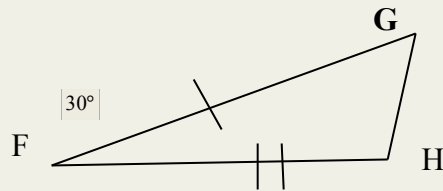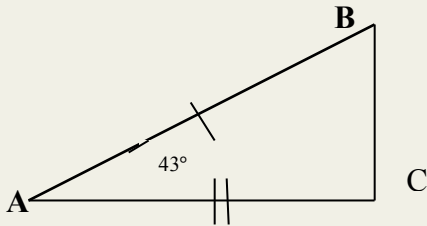# 5.6 Inequalities in Two Triangles

G.T.6 Inequalities in two triangles.

Hinge Theorem

If two sides of a triangle are congruent to two sides of another triangle, and the included angle of the first 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 triangle.
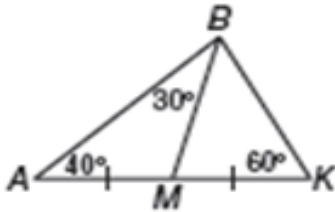
$$\text{If } \overline{AB} \cong \overline{FG}, \text{ and } \overline{AC} \cong \overline{FH} \text{ and } m < A > m < F, \text{ then } BC > GH$$

Example 1:
Compare the given measures.

AB and BK

Example 2:
Compare the given measures.
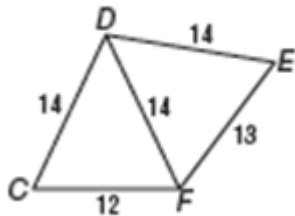
ST and SR
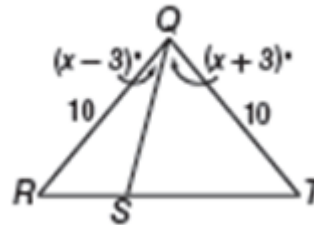
The Converse of the Hinge Theorem

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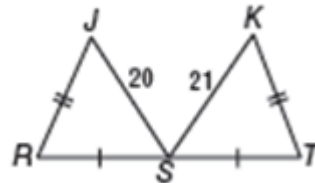
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Example 3:
Compare the given measures.

$m\angle CDF$ and $m\angle EDF$

Example 4:
Compare the given measures.

$m\angle R$ and $m\angle T$

In the figure, $\overline{BA}$, $\overline{BD}$, $\overline{BC}$, and $\overline{BE}$ are congruent and $AC < DE$. How does $m\angle 1$ compare with $m\angle 3$? Explain your thinking.

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