

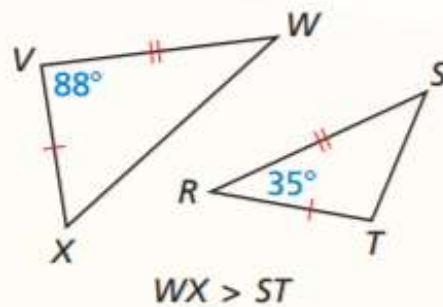
## What You Will Learn

- ▶ Compare measures in triangles.
- ▶ Solve real-life problems using the Hinge Theorem.

### Theorem 6.12 Hinge Theorem

If two sides of one 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 is longer than the third side of the second.

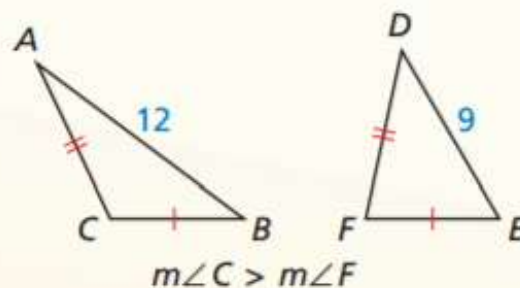
*Proof* BigIdeasMath.com



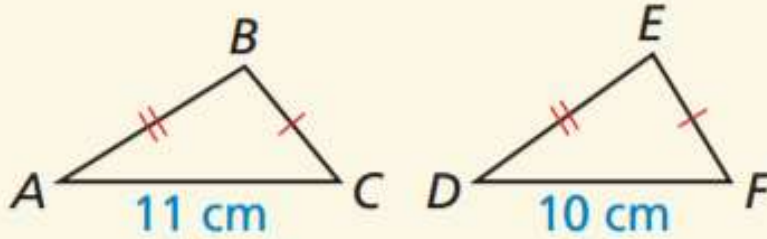
### Theorem 6.13 Converse of the Hinge Theorem

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

*Proof* Example 3, p. 345

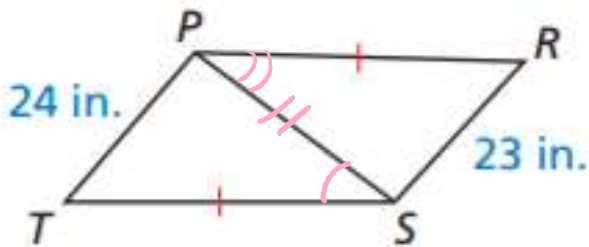


Given that  $\overline{AB} \cong \overline{DE}$  and  $\overline{BC} \cong \overline{EF}$ , how does  $m\angle B$  compare to  $m\angle E$ ?



$$m\angle B > m\angle E$$

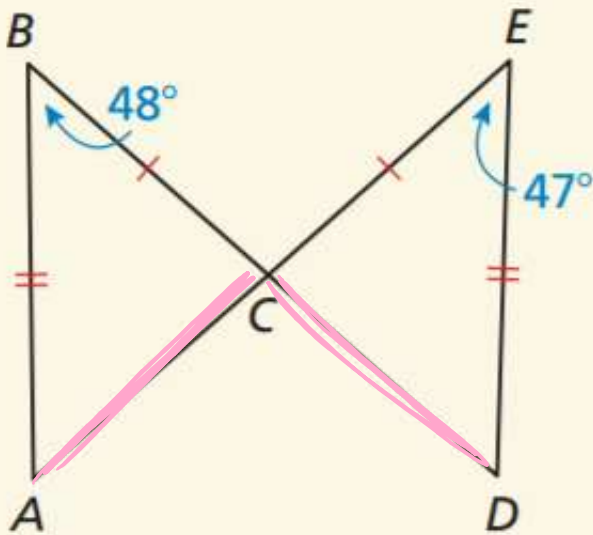
Given that  $\overline{ST} \cong \overline{PR}$ , how does  $m\angle PST$  compare to  $m\angle SPR$ ?



$$m\angle SPR < m\angle TSP$$

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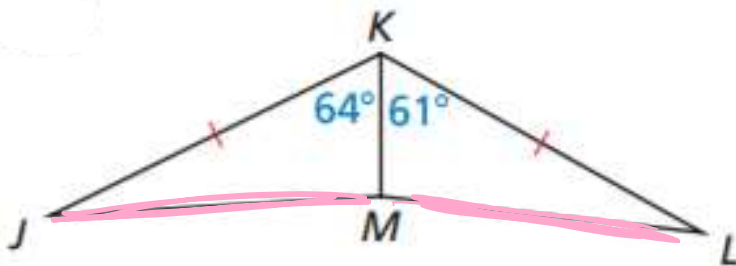
Given that  $\overline{AB} \cong \overline{DE}$  and  $\overline{BC} \cong \overline{EC}$ , how does  $AC$  compare to  $DC$ ?



$AC > CD$

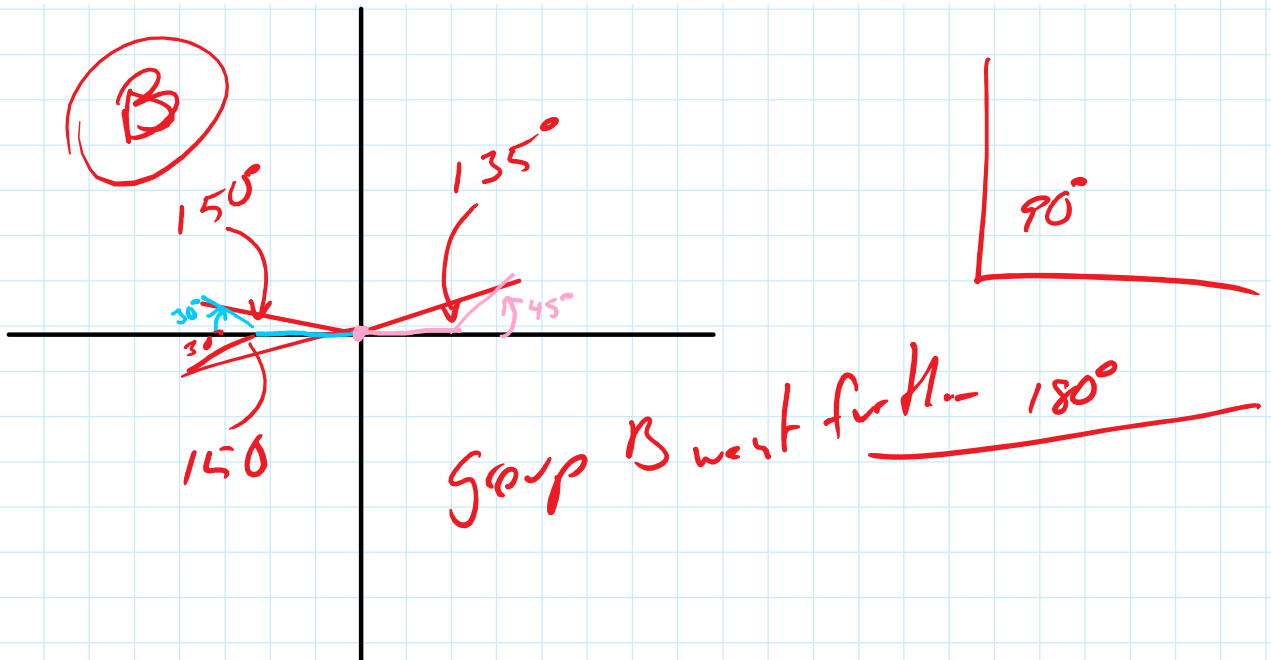
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Given that  $\overline{JK} \cong \overline{LK}$ , how does  $JM$  compare to  $LM$ ?



$JM > ML$

Two groups of bikers leave the same camp heading in opposite directions. Each group travels 2 miles, then changes direction and travels 1.2 miles. Group A starts due east and then turns  $45^\circ$  toward north. Group B starts due west and then turns  $30^\circ$  toward south. Which group is farther from camp? Explain your reasoning.



Practice sec 6.6 pg.

347: 3-10A,

13-17A, 25-28A

