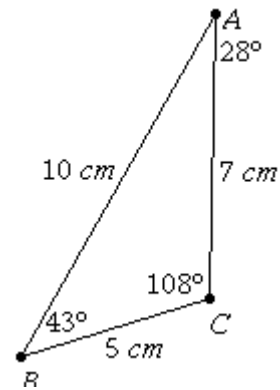


7-6: Inequalities Involving Sides and Angles of a Triangle

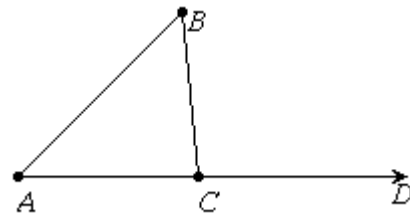
Theorem: If the lengths of two sides of a triangle are unequal, then the measures of the angles opposite these sides are unequal and the larger angle lies opposite the longer side.



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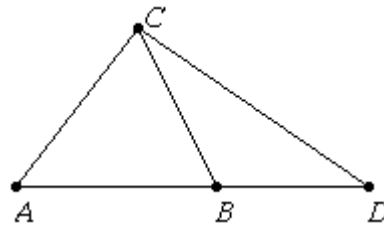
Example:

One side of $\triangle ABC$ is extended to D . If $m\angle A = 45$, $m\angle B = 50$, and $m\angle C = 95$, which is the longer side of $\triangle ABC$?



Example:

In $\triangle ADC$, \overline{CB} is drawn to \overline{ABD} and $\overline{CA} \cong \overline{CB}$. Prove that $CD > CA$.



Proof: Consider $\triangle CBD$. The measure of an exterior angle is greater than the measure of a nonadjacent interior angle, so $m\angle CBA > m\angle CDA$. Since $\overline{CA} \cong \overline{CB}$, $\triangle ABC$ is _____. The base angles of an isosceles triangle have equal measure, so _____. A quantity may be substituted for its equal in an inequality, so _____. If the measure of two angles of a triangle are unequal, then _____

Therefore, _____.