

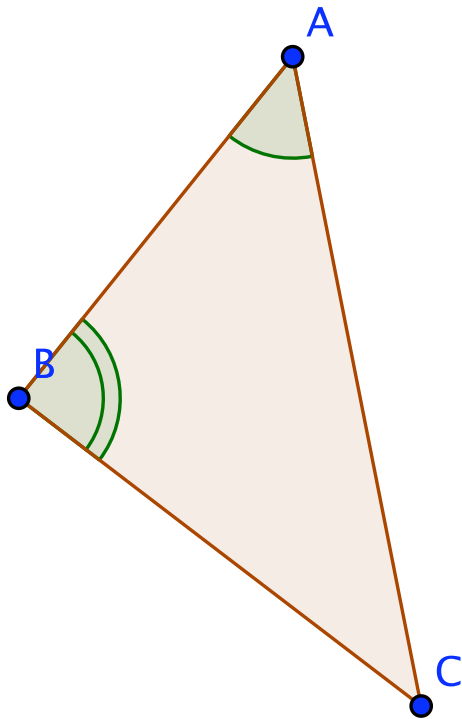
MT 453 Elements Day 6

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Proposition I.19

The greater angle in a triangle is opposite the greater side.



Let ABC be our given triangle with $\angle ABC > \angle BAC$.
Claim: $AC > BC$.

This is going to be proven using contradiction.

Suppose that $AC = BC$, we then have created an isosceles triangle
so $\angle ABC = \angle BAC$. (prop I.5)

This creates a contradiction to our claim.

Now suppose that $BC > AC$,

then $\angle BAC > \angle ABC$. (prop I.18)

This creates a contradiction to our claim.

Therefore, $AC > BC$.

Q.E.D.