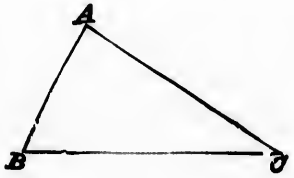
Proposition XIX. Theorem.

If one angle of a triangle be greater than a second, the side opposite the first must be greater than that opposite the second.



In $\triangle ABC$, let $\angle ABC$ be greater than $\angle ACB$.

Then must AC be greater than AB.

For if AC be not greater than AB,

AC must either $= AB$, or be less than AB.

Now AC cannot $= AB$, for then I. A.

$\angle ABC$ would $= \angle ACB$, which is not the case.

And AC cannot be less than AB, for then I. 18.

$\angle ABC$ would be less than $\angle ACB$, which is not the case;

$\therefore$ AC is greater than AB.

Q. E. D.

Ex. 1. In an obtuse-angled triangle, the greatest side is opposite the obtuse angle.

Ex. 2. BC, the base of an isosceles triangle BAC, is produced to any point D; shew that AD is greater than AB.

Ex. 3. The perpendicular is the shortest straight line, which can be drawn from a given point to a given straight line; and of others, that which is nearer to the perpendicular is less than one more remote.