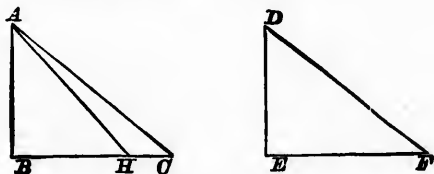


PROPOSITION XXVI. THEOREM.

If two triangles have two angles of the one equal to two angles of the other, each to each, and one side equal to one side, those sides being opposite to equal angles in each; then must the triangles be equal in all respects.



In Δs ABC , DEF ,

let $\angle ABC = \angle DEF$, and $\angle ACB = \angle DFE$, and $AB = DE$.

Then must $BC = EF$, and $AC = DF$, and $\angle BAC = \angle EDF$.

Suppose ΔDEF to be applied to ΔABC ,

so that D coincides with A , and DE falls on AB .

Then $\because DE = AB$, $\therefore E$ will coincide with B ;

and $\because \angle DEF = \angle ABC$, $\therefore EF$ will fall on BC .

Then must F coincide with C : for, if not,

let F fall between B and C , at the pt. H . Join AH .

Then $\because \angle AHB = \angle DFE$, I. 4.

$\therefore \angle AHB = \angle ACB$,

the extr. $\angle =$ the intr. and opposite $\angle$, which is impossible.

$\therefore F$ does not fall between B and C .

Similarly, it may be shewn that F does not fall on BC produced.

$\therefore F$ coincides with C , and $\therefore BC = EF$;

$\therefore AC = DF$, and $\angle BAC = \angle EDF$, I. 4

and $\therefore$ the triangles are equal in all respects.

Q. E. D.