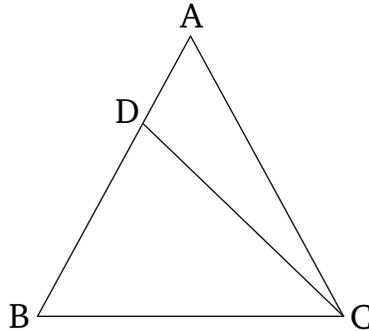


# Book 1

## Proposition 6

If a triangle has two angles equal to one another then the sides subtending the equal angles will also be equal to one another.



Let  $ABC$  be a triangle having the angle  $ABC$  equal to the angle  $ACB$ . I say that side  $AB$  is also equal to side  $AC$ .

For if  $AB$  is unequal to  $AC$  then one of them is greater. Let  $AB$  be greater. And let  $DB$ , equal to the lesser  $AC$ , have been cut off from the greater  $AB$  [Prop. 1.3]. And let  $DC$  have been joined [Post. 1].

Therefore, since  $DB$  is equal to  $AC$ , and  $BC$  (is) common, the two sides  $DB$ ,  $BC$  are equal to the two sides  $AC$ ,  $CB$ , respectively, and the angle  $DBC$  is equal to the angle  $ACB$ . Thus, the base  $DC$  is equal to the base  $AB$ , and the triangle  $DBC$  will be equal to the triangle  $ACB$  [Prop. 1.4], the lesser to the greater. The very notion (is) absurd [C.N. 5]. Thus,  $AB$  is not unequal to  $AC$ . Thus, (it is) equal.<sup>†</sup>

Thus, if a triangle has two angles equal to one another then the sides subtending the equal angles will also be equal to one another. (Which is) the very thing it was

required to show.