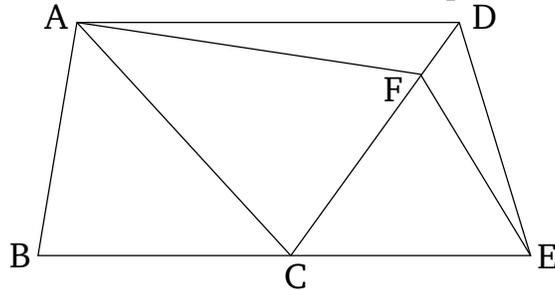


# Book 1

## Proposition 40

Equal triangles which are on equal bases, and on the same side, are also between the same parallels.



Let  $ABC$  and  $CDE$  be equal triangles on the equal bases  $BC$  and  $CE$  (respectively), and on the same side (of  $BE$ ). I say that they are also between the same parallels.

For let  $AD$  have been joined. I say that  $AD$  is parallel to  $BE$ .

For if not, let  $AF$  have been drawn through  $A$  parallel to  $BE$  [Prop. 1.31], and let  $FE$  have been joined. Thus, triangle  $ABC$  is equal to triangle  $FCE$ . For they are on equal bases,  $BC$  and  $CE$ , and between the same parallels,  $BE$  and  $AF$  [Prop. 1.38]. But, triangle  $ABC$  is equal to [triangle]  $DCE$ . Thus, [triangle]  $DCE$  is also equal to triangle  $FCE$ , the greater to the lesser. The very thing is impossible. Thus,  $AF$  is not parallel to  $BE$ . Similarly, we can show that neither (is) any other (straight-line) than  $AD$ . Thus,  $AD$  is parallel to  $BE$ .

Thus, equal triangles which are on equal bases, and on the same side, are also between the same parallels. (Which is) the very thing it was required to show.