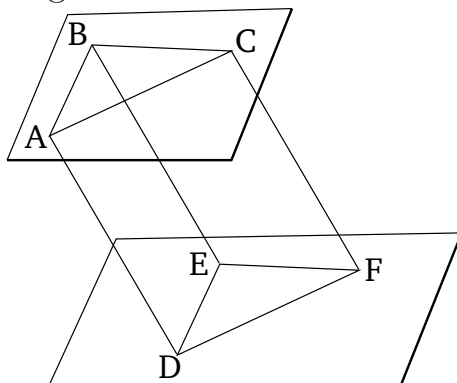


Book 11

Proposition 10

If two straight-lines joined to one another are (respectively) parallel to two straight-lines joined to one another, (but are) not in the same plane, then they will contain equal angles.



For let the two straight-lines joined to one another, AB and BC , be (respectively) parallel to the two straight-lines joined to one another, DE and EF , (but) not in the same plane. I say that angle ABC is equal to (angle) DEF .

For let BA , BC , ED , and EF have been cut off (so as to be, respectively) equal to one another. And let AD , CF , BE , AC , and DF have been joined.

And since BA is equal and parallel to ED , AD is thus also equal and parallel to BE [Prop. 1.33]. So, for the same reasons, CF is also equal and parallel to BE . Thus, AD and CF are each equal and parallel to BE . And straight-lines parallel to the same straight-line, and which are not in the same plane as it, are also parallel to one another [Prop. 11.9]. Thus, AD is parallel and

equal to CF . And AC and DF join them. Thus, AC is also equal and parallel to DF [Prop. 1.33]. And since the two (straight-lines) AB and BC are equal to the two (straight-lines) DE and EF (respectively), and the base AC (is) equal to the base DF , the angle ABC is thus equal to the (angle) DEF [Prop. 1.8].

Thus, if two straight-lines joined to one another are (respectively) parallel to two straight-lines joined to one another, (but are) not in the same plane, then they will contain equal angles. (Which is) the very thing it was required to show.