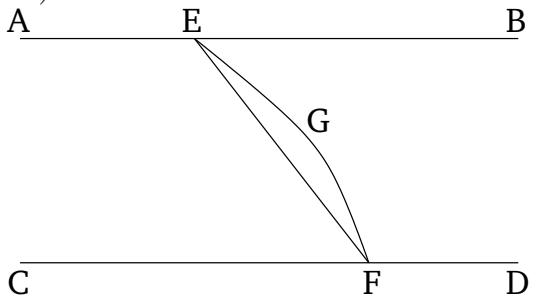
Book 11
Proposition 7

If there are two parallel straight-lines, and random points are taken on each of them, then the straight-line joining the two points is in the same plane as the parallel (straight-lines).



Let AB and CD be two parallel straight-lines, and let the random points E and F have been taken on each of them (respectively). I say that the straight-line joining points E and F is in the same (reference) plane as the parallel (straight-lines).

For (if) not, and if possible, let it be in a more elevated (plane), such as EGF. And let a plane have been drawn through EGF. So it will make a straight cutting in the reference plane [Prop. 11.3]. Let it make EF. Thus, two straight-lines (with the same end-points), EGF and EF, will enclose an area. The very thing is impossible. Thus, the straight-line joining E to F is not in a more elevated plane. The straight-line joining E to F is thus in the plane through the parallel (straight-lines) AB and CD.

Thus, if there are two parallel straight-lines, and random points are taken on each of them, then the straight-line joining the two points is in the same plane as the

parallel (straight-lines). (Which is) the very thing it was required to show.