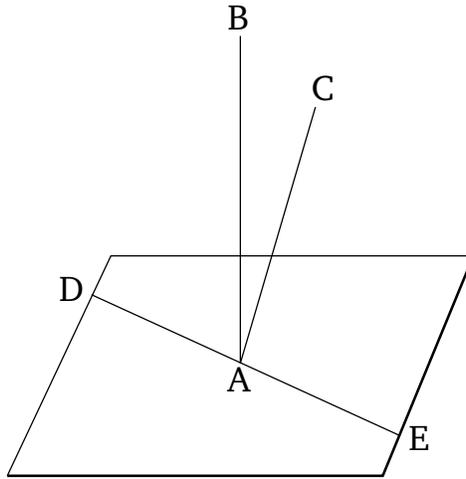


# Book 11

## Proposition 13

Two (different) straight-lines cannot be set up at the same point at right-angles to the same plane, on the same side.



For, if possible, let the two straight-lines  $AB$  and  $AC$  have been set up at the same point  $A$  at right-angles to the reference plane, on the same side. And let the plane through  $BA$  and  $AC$  have been drawn. So it will make a straight cutting (passing) through (point)  $A$  in the reference plane [Prop. 11.3]. Let it have made  $DAE$ . Thus,  $AB$ ,  $AC$ , and  $DAE$  are straight-lines in one plane. And since  $CA$  is at right-angles to the reference plane, it will thus also make right-angles with all of the straight-lines joined to it which are also in the reference plane [Def. 11.3]. And  $DAE$ , which is in the reference plane, is joined to it. Thus, angle  $CAE$  is a right-angle. So, for the same (reasons),  $BAE$  is also a right-angle. Thus,  $CAE$  (is) equal to  $BAE$ . And they are in one plane. The very thing is impossible.

Thus, two (different) straight-lines cannot be set up at the same point at right-angles to the same plane, on the same side. (Which is) the very thing it was required to show.