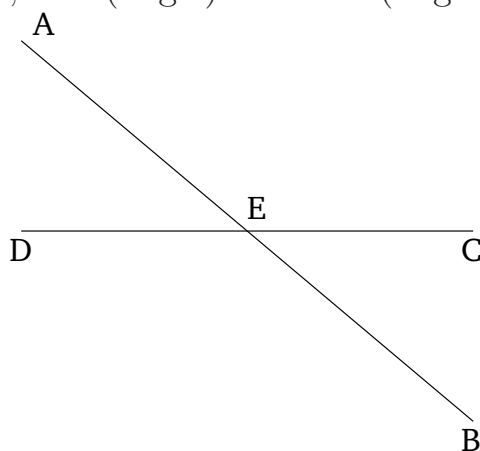


Book 1

Proposition 15

If two straight-lines cut one another then they make the vertically opposite angles equal to one another.

For let the two straight-lines AB and CD cut one another at the point E . I say that angle AEC is equal to (angle) DEB , and (angle) CEB to (angle) AED .



For since the straight-line AE stands on the straight-line CD , making the angles CEA and AED , the (sum of the) angles CEA and AED is thus equal to two right-angles [Prop. 1.13]. Again, since the straight-line DE stands on the straight-line AB , making the angles AED and DEB , the (sum of the) angles AED and DEB is thus equal to two right-angles [Prop. 1.13]. But (the sum of) CEA and AED was also shown (to be) equal to two right-angles. Thus, (the sum of) CEA and AED is equal to (the sum of) AED and DEB [C.N. 1]. Let AED have been subtracted from both. Thus, the remainder CEA is equal to the remainder DEB [C.N. 3]. Similarly, it can be shown that CEB and DEA are also

equal.

Thus, if two straight-lines cut one another then they make the vertically opposite angles equal to one another. (Which is) the very thing it was required to show.