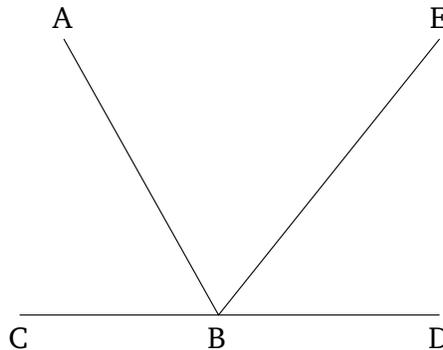


Book 1

Proposition 14

If two straight-lines, not lying on the same side, make adjacent angles (whose sum is) equal to two right-angles with some straight-line, at a point on it, then the two straight-lines will be straight-on (with respect) to one another.



For let two straight-lines BC and BD , not lying on the same side, make adjacent angles ABC and ABD (whose sum is) equal to two right-angles with some straight-line AB , at the point B on it. I say that BD is straight-on with respect to CB .

For if BD is not straight-on to BC then let BE be straight-on to CB .

Therefore, since the straight-line AB stands on the straight-line CBE , the (sum of the) angles ABC and ABE is thus equal to two right-angles [Prop. 1.13]. But (the sum of) ABC and ABD is also equal to two right-angles. Thus, (the sum of angles) CBA and ABE is equal to (the sum of angles) CBA and ABD [C.N. 1]. Let (angle) CBA have been subtracted from both. Thus, the remainder ABE is equal to the remainder ABD

[C.N. 3], the lesser to the greater. The very thing is impossible. Thus, BE is not straight-on with respect to CB . Similarly, we can show that neither (is) any other (straight-line) than BD . Thus, CB is straight-on with respect to BD .

Thus, if two straight-lines, not lying on the same side, make adjacent angles (whose sum is) equal to two right-angles with some straight-line, at a point on it, then the two straight-lines will be straight-on (with respect) to one another. (Which is) the very thing it was required to show.