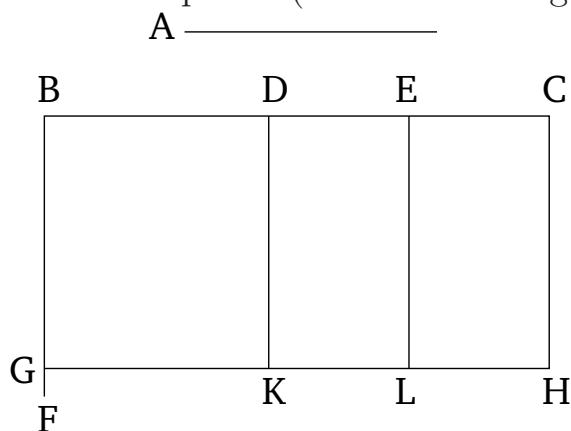


Book 2

Proposition 1[†]

If there are two straight-lines, and one of them is cut into any number of pieces whatsoever, then the rectangle contained by the two straight-lines is equal to the (sum of the) rectangles contained by the uncut (straight-line), and every one of the pieces (of the cut straight-line).



Let A and BC be the two straight-lines, and let BC be cut, at random, at points D and E . I say that the rectangle contained by A and BC is equal to the rectangle(s) contained by A and BD , by A and DE , and, finally, by A and EC .

For let BF have been drawn from point B , at right-angles to BC [Prop. 1.11], and let BG be made equal to A [Prop. 1.3], and let GH have been drawn through (point) G , parallel to BC [Prop. 1.31], and let DK , EL , and CH have been drawn through (points) D , E , and C (respectively), parallel to BG [Prop. 1.31].

So the (rectangle) BH is equal to the (rectangles) BK , DL , and EH . And BH is the (rectangle contained) by

A and BC . For it is contained by GB and BC , and BG (is) equal to A . And BK (is) the (rectangle contained) by A and BD . For it is contained by GB and BD , and BG (is) equal to A . And DL (is) the (rectangle contained) by A and DE . For DK , that is to say BG [Prop. 1.34], (is) equal to A . Similarly, EH (is) also the (rectangle contained) by A and EC . Thus, the (rectangle contained) by A and BC is equal to the (rectangles contained) by A and BD , by A and DE , and, finally, by A and EC .

Thus, if there are two straight-lines, and one of them is cut into any number of pieces whatsoever, then the rectangle contained by the two straight-lines is equal to the (sum of the) rectangles contained by the uncut (straight-line), and every one of the pieces (of the cut straight-line). (Which is) the very thing it was required to show.