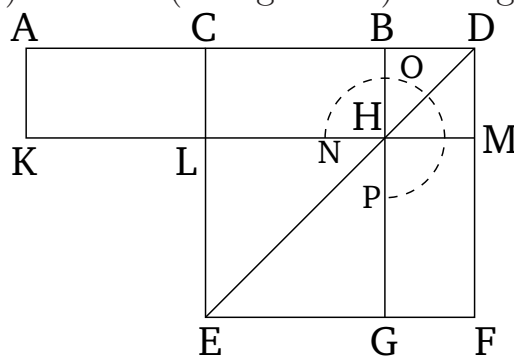


Book 2

Proposition 6

If a straight-line is cut in half, and any straight-line added to it straight-on, then the rectangle contained by the whole (straight-line) with the (straight-line) having being added, and the (straight-line) having being added, plus the square on half (of the original straight-line), is equal to the square on the sum of half (of the original straight-line) and the (straight-line) having been added.



For let any straight-line AB have been cut in half at point C , and let any straight-line BD have been added to it straight-on. I say that the rectangle contained by AD and DB , plus the square on CB , is equal to the square on CD .

For let the square $CEFD$ have been described on CD [Prop. 1.46], and let DE have been joined, and let BG have been drawn through point B , parallel to either of EC or DF [Prop. 1.31], and let KM have been drawn through point H , parallel to either of AB or EF [Prop. 1.31], and finally let AK have been drawn through A , parallel to either of CL or DM [Prop. 1.31].

Therefore, since AC is equal to CB , (rectangle) AL is

also equal to (rectangle) CH [Prop. 1.36]. But, (rectangle) CH is equal to (rectangle) HF [Prop. 1.43]. Thus, (rectangle) AL is also equal to (rectangle) HF . Let (rectangle) CM have been added to both. Thus, the whole (rectangle) AM is equal to the gnomon NOP . But, AM is the (rectangle contained) by AD and DB . For DM is equal to DB . Thus, gnomon NOP is also equal to the [rectangle contained] by AD and DB . Let LG , which is equal to the square on BC , have been added to both. Thus, the rectangle contained by AD and DB , plus the square on CB , is equal to the gnomon NOP and the (square) LG . But the gnomon NOP and the (square) LG is (equivalent to) the whole square $CEFD$, which is on CD . Thus, the rectangle contained by AD and DB , plus the square on CB , is equal to the square on CD .

Thus, if a straight-line is cut in half, and any straight-line added to it straight-on, then the rectangle contained by the whole (straight-line) with the (straight-line) having being added, and the (straight-line) having being added, plus the square on half (of the original straight-line), is equal to the square on the sum of half (of the original straight-line) and the (straight-line) having been added. (Which is) the very thing it was required to show.