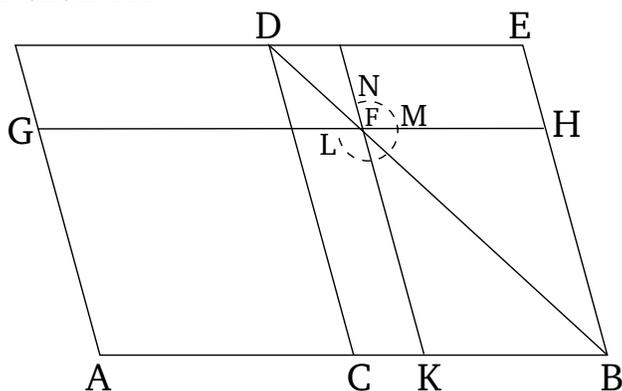


Book 6 Proposition 27

Of all the parallelograms applied to the same straight-line, and falling short by parallelogrammic figures similar, and similarly laid out, to the (parallelogram) described on half (the straight-line), the greatest is the [parallelogram] applied to half (the straight-line) which (is) similar to (that parallelogram) by which it falls short.

Let AB be a straight-line, and let it have been cut in half at (point) C [Prop. 1.10]. And let the parallelogram AD have been applied to the straight-line AB , falling short by the parallelogrammic figure DB (which is) applied to half of AB —that is to say, CB . I say that of all the parallelograms applied to AB , and falling short by [parallelogrammic] figures similar, and similarly laid out, to DB , the greatest is AD . For let the parallelogram AF have been applied to the straight-line AB , falling short by the parallelogrammic figure FB (which is) similar, and similarly laid out, to DB . I say that AD is greater than AF .



For since parallelogram DB is similar to parallelogram

FB , they are about the same diagonal [Prop. 6.26]. Let their (common) diagonal DB have been drawn, and let the (rest of the) figure have been described.

Therefore, since (complement) CF is equal to (complement) FE [Prop. 1.43], and (parallelogram) FB is common, the whole (parallelogram) CH is thus equal to the whole (parallelogram) KE . But, (parallelogram) CH is equal to CG , since AC (is) also (equal) to CB [Prop. 6.1]. Thus, (parallelogram) GC is also equal to EK . Let (parallelogram) CF have been added to both. Thus, the whole (parallelogram) AF is equal to the gnomon LMN . Hence, parallelogram DB —that is to say, AD —is greater than parallelogram AF .

Thus, for all parallelograms applied to the same straight-line, and falling short by a parallelogrammic figure similar, and similarly laid out, to the (parallelogram) described on half (the straight-line), the greatest is the [parallelogram] applied to half (the straight-line). (Which is) the very thing it was required to show.