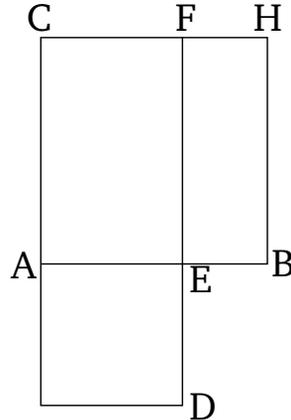


Book 6

Proposition 30

To cut a given finite straight-line in extreme and mean ratio.



Let AB be the given finite straight-line. So it is required to cut the straight-line AB in extreme and mean ratio.

Let the square BC have been described on AB [Prop. 1.46], and let the parallelogram CD , equal to BC , have been applied to AC , overshooting by the figure AD (which is) similar to BC [Prop. 6.29].

And BC is a square. Thus, AD is also a square. And since BC is equal to CD , let (rectangle) CE have been subtracted from both. Thus, the remaining (rectangle) BF is equal to the remaining (square) AD . And it is also equiangular to it. Thus, the sides of BF and AD about the equal angles are reciprocally proportional [Prop. 6.14]. Thus, as FE is to ED , so AE (is) to EB . And FE (is) equal to AB , and ED to AE . Thus, as BA is to AE , so AE (is) to EB . And AB (is) greater than AE . Thus, AE (is) also greater than EB [Prop. 5.14].

Thus, the straight-line AB has been cut in extreme and mean ratio at E , and AE is its greater piece. (Which is) the very thing it was required to do.