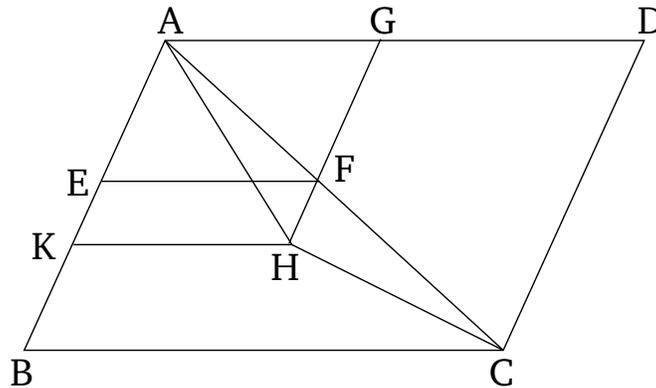


# Book 6

## Proposition 26

If from a parallelogram a(nother) parallelogram is subtracted (which is) similar, and similarly laid out, to the whole, having a common angle with it, then (the subtracted parallelogram) is about the same diagonal as the whole.

For, from parallelogram  $ABCD$ , let (parallelogram)  $AF$  have been subtracted (which is) similar, and similarly laid out, to  $ABCD$ , having the common angle  $DAB$  with it. I say that  $ABCD$  is about the same diagonal as  $AF$ .



For (if) not, then, if possible, let  $AHC$  be [ $ABCD$ 's] diagonal. And producing  $GF$ , let it have been drawn through to (point)  $H$ . And let  $HK$  have been drawn through (point)  $H$ , parallel to either of  $AD$  or  $BC$  [Prop. 1.31].

Therefore, since  $ABCD$  is about the same diagonal as  $KG$ , thus as  $DA$  is to  $AB$ , so  $GA$  (is) to  $AK$  [Prop. 6.24]. And, on account of the similarity of  $ABCD$  and  $EG$ , also, as  $DA$  (is) to  $AB$ , so  $GA$  (is) to  $AE$ . Thus, also, as  $GA$  (is) to  $AK$ , so  $GA$  (is) to  $AE$ . Thus,  $GA$  has the

same ratio to each of  $AK$  and  $AE$ . Thus,  $AE$  is equal to  $AK$  [Prop. 5.9], the lesser to the greater. The very thing is impossible. Thus,  $ABCD$  is not not about the same diagonal as  $AF$ . Thus, parallelogram  $ABCD$  is about the same diagonal as parallelogram  $AF$ .

Thus, if from a parallelogram a(nother) parallelogram is subtracted (which is) similar, and similarly laid out, to the whole, having a common angle with it, then (the subtracted parallelogram) is about the same diagonal as the whole. (Which is) the very thing it was required to show.