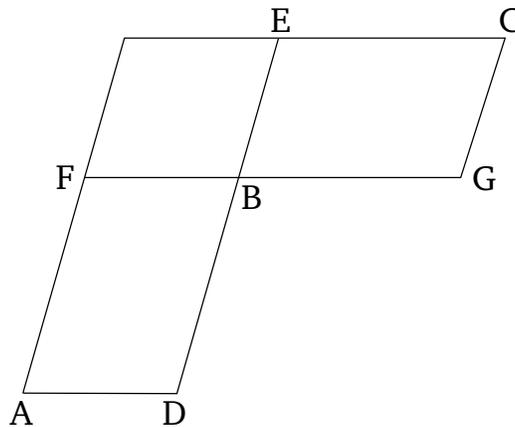


# Book 6

## Proposition 14

In equal and equiangular parallelograms the sides about the equal angles are reciprocally proportional. And those equiangular parallelograms in which the sides about the equal angles are reciprocally proportional are equal.

Let  $AB$  and  $BC$  be equal and equiangular parallelograms having the angles at  $B$  equal. And let  $DB$  and  $BE$  be laid down straight-on (with respect to one another). Thus,  $FB$  and  $BG$  are also straight-on (with respect to one another) [Prop. 1.14]. I say that the sides of  $AB$  and  $BC$  about the equal angles are reciprocally proportional, that is to say, that as  $DB$  is to  $BE$ , so  $GB$  (is) to  $BF$ .



For let the parallelogram  $FE$  have been completed. Therefore, since parallelogram  $AB$  is equal to parallelogram  $BC$ , and  $FE$  (is) some other (parallelogram), thus as (parallelogram)  $AB$  is to  $FE$ , so (parallelogram)  $BC$  (is) to  $FE$  [Prop. 5.7]. But, as (parallelogram)  $AB$  (is) to  $FE$ , so  $DB$  (is) to  $BE$ , and as (parallelogram)  $BC$

(is) to  $FE$ , so  $GB$  (is) to  $BF$  [Prop. 6.1]. Thus, also, as  $DB$  (is) to  $BE$ , so  $GB$  (is) to  $BF$ . Thus, in parallelograms  $AB$  and  $BC$  the sides about the equal angles are reciprocally proportional.

And so, let  $DB$  be to  $BE$ , as  $GB$  (is) to  $BF$ . I say that parallelogram  $AB$  is equal to parallelogram  $BC$ .

For since as  $DB$  is to  $BE$ , so  $GB$  (is) to  $BF$ , but as  $DB$  (is) to  $BE$ , so parallelogram  $AB$  (is) to parallelogram  $FE$ , and as  $GB$  (is) to  $BF$ , so parallelogram  $BC$  (is) to parallelogram  $FE$  [Prop. 6.1], thus, also, as (parallelogram)  $AB$  (is) to  $FE$ , so (parallelogram)  $BC$  (is) to  $FE$  [Prop. 5.11]. Thus, parallelogram  $AB$  is equal to parallelogram  $BC$  [Prop. 5.9].

Thus, in equal and equiangular parallelograms the sides about the equal angles are reciprocally proportional. And those equiangular parallelograms in which the sides about the equal angles are reciprocally proportional are equal. (Which is) the very thing it was required to show.