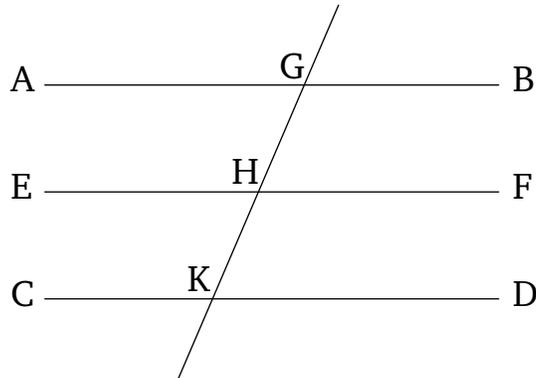


# Book 1

## Proposition 30

(Straight-lines) parallel to the same straight-line are also parallel to one another.



Let each of the (straight-lines)  $AB$  and  $CD$  be parallel to  $EF$ . I say that  $AB$  is also parallel to  $CD$ .

For let the straight-line  $GK$  fall across ( $AB$ ,  $CD$ , and  $EF$ ).

And since the straight-line  $GK$  has fallen across the parallel straight-lines  $AB$  and  $EF$ , (angle)  $AGK$  (is) thus equal to  $GHF$  [Prop. 1.29]. Again, since the straight-line  $GK$  has fallen across the parallel straight-lines  $EF$  and  $CD$ , (angle)  $GHF$  is equal to  $GKD$  [Prop. 1.29]. But  $AGK$  was also shown (to be) equal to  $GHF$ . Thus,  $AGK$  is also equal to  $GKD$ . And they are alternate (angles). Thus,  $AB$  is parallel to  $CD$  [Prop. 1.27].

[Thus, (straight-lines) parallel to the same straight-line are also parallel to one another.] (Which is) the very thing it was required to show.