

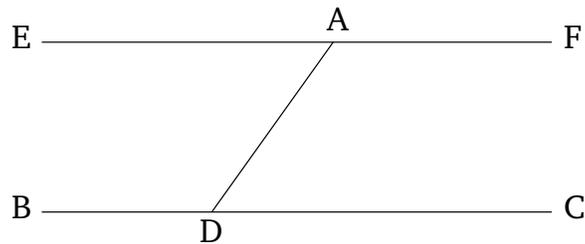
# Book 1

## Proposition 31

To draw a straight-line parallel to a given straight-line, through a given point.

Let  $A$  be the given point, and  $BC$  the given straight-line. So it is required to draw a straight-line parallel to the straight-line  $BC$ , through the point  $A$ .

Let the point  $D$  have been taken a random on  $BC$ , and let  $AD$  have been joined. And let (angle)  $DAE$ , equal to angle  $ADC$ , have been constructed on the straight-line  $DA$  at the point  $A$  on it [Prop. 1.23]. And let the straight-line  $AF$  have been produced in a straight-line with  $EA$ .



And since the straight-line  $AD$ , (in) falling across the two straight-lines  $BC$  and  $EF$ , has made the alternate angles  $EAD$  and  $ADC$  equal to one another,  $EAF$  is thus parallel to  $BC$  [Prop. 1.27].

Thus, the straight-line  $EAF$  has been drawn parallel to the given straight-line  $BC$ , through the given point  $A$ . (Which is) the very thing it was required to do.