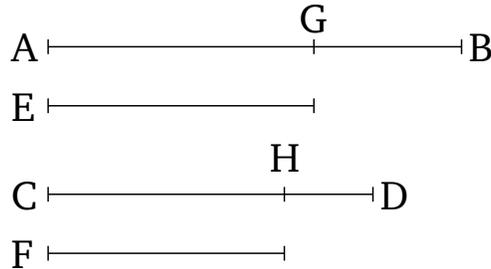


## Book 5

### Proposition 25

If four magnitudes are proportional then the (sum of the) largest and the smallest [of them] is greater than the (sum of the) remaining two (magnitudes).



Let  $AB$ ,  $CD$ ,  $E$ , and  $F$  be four proportional magnitudes, (such that) as  $AB$  (is) to  $CD$ , so  $E$  (is) to  $F$ . And let  $AB$  be the greatest of them, and  $F$  the least. I say that  $AB$  and  $F$  is greater than  $CD$  and  $E$ .

For let  $AG$  be made equal to  $E$ , and  $CH$  equal to  $F$ .

[In fact,] since as  $AB$  is to  $CD$ , so  $E$  (is) to  $F$ , and  $E$  (is) equal to  $AG$ , and  $F$  to  $CH$ , thus as  $AB$  is to  $CD$ , so  $AG$  (is) to  $CH$ . And since the whole  $AB$  is to the whole  $CD$  as the (part) taken away  $AG$  (is) to the (part) taken away  $CH$ , thus the remainder  $GB$  will also be to the remainder  $HD$  as the whole  $AB$  (is) to the whole  $CD$  [Prop. 5.19]. And  $AB$  (is) greater than  $CD$ . Thus,  $GB$  (is) also greater than  $HD$ . And since  $AG$  is equal to  $E$ , and  $CH$  to  $F$ , thus  $AG$  and  $F$  is equal to  $CH$  and  $E$ . And [since] if [equal (magnitudes) are added to unequal (magnitudes) then the wholes are unequal, thus if]  $AG$  and  $F$  are added to  $GB$ , and  $CH$  and  $E$  to  $HD$ — $GB$  and  $HD$  being unequal, and  $GB$  greater—it is inferred that  $AB$  and  $F$  (is) greater than  $CD$  and  $E$ .

Thus, if four magnitudes are proportional then the (sum of the) largest and the smallest of them is greater than the (sum of the) remaining two (magnitudes). (Which is) the very thing it was required to show.