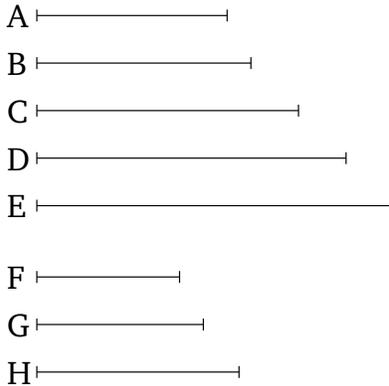


## Book 8

### Proposition 6

If there are any multitude whatsoever of continuously proportional numbers, and the first does not measure the second, then no other (number) will measure any other (number) either.



Let  $A, B, C, D, E$  be any multitude whatsoever of continuously proportional numbers, and let  $A$  not measure  $B$ . I say that no other (number) will measure any other (number) either.

Now, (it is) clear that  $A, B, C, D, E$  do not successively measure one another. For  $A$  does not even measure  $B$ . So I say that no other (number) will measure any other (number) either. For, if possible, let  $A$  measure  $C$ . And as many (numbers) as are  $A, B, C$ , let so many of the least numbers,  $F, G, H$ , have been taken of those (numbers) having the same ratio as  $A, B, C$  [Prop. 7.33]. And since  $F, G, H$  are in the same ratio as  $A, B, C$ , and the multitude of  $A, B, C$  is equal to the multitude of  $F, G, H$ , thus, via equality, as  $A$  is to  $C$ , so  $F$  (is) to  $H$  [Prop. 7.14]. And since as  $A$  is to  $B$ , so  $F$  (is) to  $G$ , and  $A$  does not measure  $B$ ,  $F$  does not measure  $G$  either [Def. 7.20]. Thus,  $F$  is not a unit. For a unit

measures all numbers. And  $F$  and  $H$  are prime to one another [Prop. 8.3] [and thus  $F$  does not measure  $H$ ]. And as  $F$  is to  $H$ , so  $A$  (is) to  $C$ . And thus  $A$  does not measure  $C$  either [Def. 7.20]. So, similarly, we can show that no other (number) can measure any other (number) either. (Which is) the very thing it was required to show.