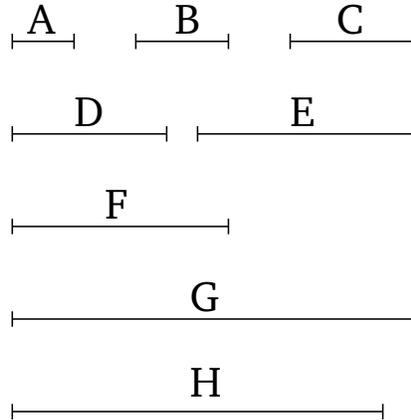


Book 7

Proposition 39

To find the least number that will have given parts.



Let A , B , and C be the given parts. So it is required to find the least number which will have the parts A , B , and C (*i.e.*, an A th part, a B th part, and a C th part).

For let D , E , and F be numbers having the same names as the parts A , B , and C (respectively). And let the least number, G , measured by D , E , and F , have been taken [Prop. 7.36].

Thus, G has parts called the same as D , E , and F [Prop. 7.37]. And A , B , and C are parts called the same as D , E , and F (respectively). Thus, G has the parts A , B , and C . So I say that (G) is also the least (number having the parts A , B , and C). For if not, there will be some number less than G which will have the parts A , B , and C . Let it be H . Since H has the parts A , B , and C , H will thus be measured by numbers called the same as the parts A , B , and C [Prop. 7.38]. And D , E , and F are numbers called the same as the parts A , B , and

C (respectively). Thus, H is measured by D , E , and F . And (H) is less than G . The very thing is impossible. Thus, there cannot be some number less than G which will have the parts A , B , and C . (Which is) the very thing it was required to show.