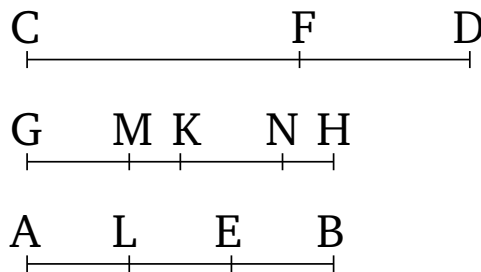# Book 7
Proposition 8

If a number is those parts of a number that a (part) taken away (is) of a (part) taken away then the remainder will also be the same parts of the remainder that the whole (is) of the whole.

For let a number AB be those parts of a number CD that a (part) taken away AE (is) of a (part) taken away CF. I say that the remainder EB is also the same parts of the remainder FD that the whole AB (is) of the whole CD.

For let GH be laid down equal to AB. Thus, which(ever) parts GH is of CD, AE is also the same parts of CF. Let GH have been divided into the parts of CD, GK and KH, and AE into the part of CF, AL and LE. So the multitude of (divisions) GK, KH will be equal to the multitude of (divisions) AL, LE. And since which(ever) part GK is of CD, AL is also the same part of CF, and CD (is) greater than CF, GK (is) thus also greater than AL. Let GM be made equal to AL. Thus, which(ever) part GK is of CD, GM is also the same part of CF. Thus, the remainder MK is also the same part of the remainder FD that the whole GK (is) of the whole CD <mark>[Prop. 7.5]</mark>. Again, since which(ever) part KH is of CD, EL is also the same part of CF, and CD (is) greater than CF, HK (is) thus also greater than EL. Let KN be made equal to EL. Thus, which(ever) part KH (is)

of CD, KN is also the same part of CF. Thus, the remainder NH is also the same part of the remainder FD that the whole KH (is) of the whole CD [Prop. 7.5]. And the remainder MK was also shown to be the same part of the remainder FD that the whole GK (is) of the whole CD. Thus, the sum MK, NH is the same parts of DF that the whole HG (is) of the whole CD. And the sum MK, NH (is) equal to EB, and HG to BA. Thus, the remainder EB is also the same parts of the remainder FD that the whole AB (is) of the whole CD. (Which is) the very thing it was required to show.