

Book 5

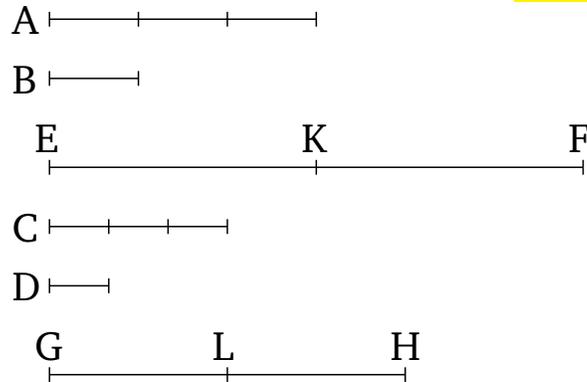
Proposition 3

If a first (magnitude) and a third are equal multiples of a second and a fourth (respectively), and equal multiples are taken of the first and the third, then, via equality, the (magnitudes) taken will also be equal multiples of the second (magnitude) and the fourth, respectively.

For let a first (magnitude) A and a third C be equal multiples of a second B and a fourth D (respectively), and let the equal multiples EF and GH have been taken of A and C (respectively). I say that EF and GH are equal multiples of B and D (respectively).

For since EF and GH are equal multiples of A and C (respectively), thus as many (magnitudes) as (there) are in EF equal to A , so many (are there) also in GH equal to C . Let EF have been divided into magnitudes EK , KF equal to A , and GH into (magnitudes) GL , LH equal to C . So, the number of (magnitudes) EK , KF will be equal to the number of (magnitudes) GL , LH . And since A and C are equal multiples of B and D (respectively), and EK (is) equal to A , and GL to C , EK and GL are thus equal multiples of B and D (respectively). So, for the same (reasons), KF and LH are equal multiples of B and D (respectively). Therefore, since the first (magnitude) EK and the third GL are equal multiples of the second B and the fourth D (respectively), and the fifth (magnitude) KF and the sixth LH are also equal multiples of the second B and the fourth D (respectively), then the first (magnitude) and

fifth, being added together, (to give) EF , and the third (magnitude) and sixth, (being added together, to give) GH , are thus also equal multiples of the second (magnitude) B and the fourth D (respectively) [Prop. 5.2].



Thus, if a first (magnitude) and a third are equal multiples of a second and a fourth (respectively), and equal multiples are taken of the first and the third, then, via equality, the (magnitudes) taken will also be equal multiples of the second (magnitude) and the fourth, respectively. (Which is) the very thing it was required to show.