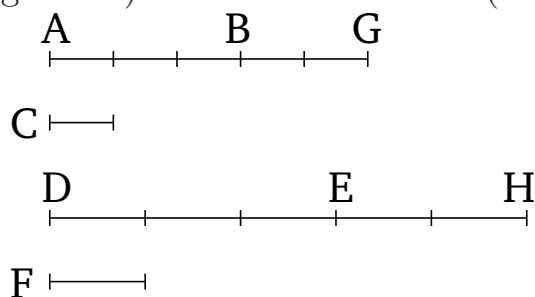


# Book 5

## Proposition 2

If a first (magnitude) and a third are equal multiples of a second and a fourth (respectively), and a fifth (magnitude) and a sixth (are) also equal multiples of the second and fourth (respectively), then the first (magnitude) and the fifth, being added together, and the third and the sixth, (being added together), will also be equal multiples of the second (magnitude) and the fourth (respectively).

For let a first (magnitude)  $AB$  and a third  $DE$  be equal multiples of a second  $C$  and a fourth  $F$  (respectively). And let a fifth (magnitude)  $BG$  and a sixth  $EH$  also be (other) equal multiples of the second  $C$  and the fourth  $F$  (respectively). I say that the first (magnitude) and the fifth, being added together, (to give)  $AG$ , and the third (magnitude) and the sixth, (being added together, to give)  $DH$ , will also be equal multiples of the second (magnitude)  $C$  and the fourth  $F$  (respectively).



For since  $AB$  and  $DE$  are equal multiples of  $C$  and  $F$  (respectively), thus as many (magnitudes) as (there) are in  $AB$  equal to  $C$ , so many (are there) also in  $DE$  equal to  $F$ . And so, for the same (reasons), as many (magnitudes) as (there) are in  $BG$  equal to  $C$ , so many

(are there) also in  $EH$  equal to  $F$ . Thus, as many (magnitudes) as (there) are in the whole of  $AG$  equal to  $C$ , so many (are there) also in the whole of  $DH$  equal to  $F$ . Thus, as many times as  $AG$  is (divisible) by  $C$ , so many times will  $DH$  also be divisible by  $F$ . Thus, the first (magnitude) and the fifth, being added together, (to give)  $AG$ , and the third (magnitude) and the sixth, (being added together, to give)  $DH$ , will also be equal multiples of the second (magnitude)  $C$  and the fourth  $F$  (respectively).

Thus, if a first (magnitude) and a third are equal multiples of a second and a fourth (respectively), and a fifth (magnitude) and a sixth (are) also equal multiples of the second and fourth (respectively), then the first (magnitude) and the fifth, being added together, and the third and sixth, (being added together), will also be equal multiples of the second (magnitude) and the fourth (respectively). (Which is) the very thing it was required to show.