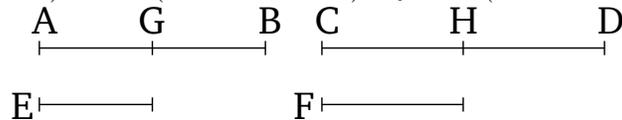


# Book 5

## Proposition 1

If there are any number of magnitudes whatsoever (which are) equal multiples, respectively, of some (other) magnitudes, of equal number (to them), then as many times as one of the (first) magnitudes is (divisible) by one (of the second), so many times will all (of the first magnitudes) also (be divisible) by all (of the second).



Let there be any number of magnitudes whatsoever,  $AB$ ,  $CD$ , (which are) equal multiples, respectively, of some (other) magnitudes,  $E$ ,  $F$ , of equal number (to them). I say that as many times as  $AB$  is (divisible) by  $E$ , so many times will  $AB$ ,  $CD$  also be (divisible) by  $E$ ,  $F$ .

For since  $AB$ ,  $CD$  are equal multiples of  $E$ ,  $F$ , thus as many magnitudes as (there) are in  $AB$  equal to  $E$ , so many (are there) also in  $CD$  equal to  $F$ . Let  $AB$  have been divided into magnitudes  $AG$ ,  $GB$ , equal to  $E$ , and  $CD$  into (magnitudes)  $CH$ ,  $HD$ , equal to  $F$ . So, the number of (divisions)  $AG$ ,  $GB$  will be equal to the number of (divisions)  $CH$ ,  $HD$ . And since  $AG$  is equal to  $E$ , and  $CH$  to  $F$ ,  $AG$  (is) thus equal to  $E$ , and  $AG$ ,  $CH$  to  $E$ ,  $F$ . So, for the same (reasons),  $GB$  is equal to  $E$ , and  $GB$ ,  $HD$  to  $E$ ,  $F$ . Thus, as many (magnitudes) as (there) are in  $AB$  equal to  $E$ , so many (are there) also in  $AB$ ,  $CD$  equal to  $E$ ,  $F$ . Thus, as many times as  $AB$  is (divisible) by  $E$ , so many times will  $AB$ ,  $CD$  also be

(divisible) by  $E$ ,  $F$ .

Thus, if there are any number of magnitudes whatsoever (which are) equal multiples, respectively, of some (other) magnitudes, of equal number (to them), then as many times as one of the (first) magnitudes is (divisible) by one (of the second), so many times will all (of the first magnitudes) also (be divisible) by all (of the second). (Which is) the very thing it was required to show.