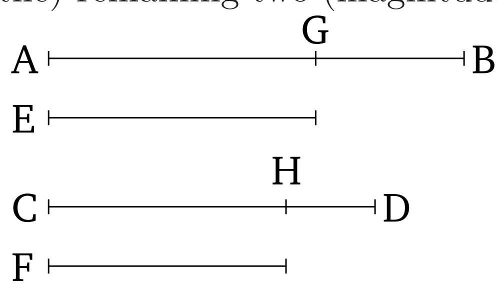
Book 5
Proposition 25

If four magnitudes are proportional then the (sum of the) largest and the smallest [of them] is greater than the (sum of the) remaining two (magnitudes).



Let AB, CD, E, and F be four proportional magnitudes, (such that) as AB (is) to CD, so E (is) to F. And let AB be the greatest of them, and F the least. I say that AB and F is greater than CD and E.

For let AG be made equal to E, and CH equal to F.

[In fact,] since as AB is to CD, so E (is) to F, and E (is) equal to AG, and F to CH, thus as AB is to CD, so AG (is) to CH. And since the whole AB is to the whole CD as the (part) taken away AG (is) to the (part) taken away CH, thus the remainder GB will also be to the remainder HD as the whole AB (is) to the whole CD [Prop. 5.19]. And AB (is) greater than CD. Thus, GB (is) also greater than HD. And since AG is equal to E, and CH to F, thus AG and F is equal to CH and E. And [since] if [equal (magnitudes) are added to unequal (magnitudes) then the wholes are unequal, thus if] AG and F are added to GB, and CH and E to HD—GB and HD being unequal, and GB greater—it is inferred that AB and F (is) greater than CD and E.

Thus, if four magnitudes are proportional then the (sum of the) largest and the smallest of them is greater than the (sum of the) remaining two (magnitudes). (Which is) the very thing it was required to show.