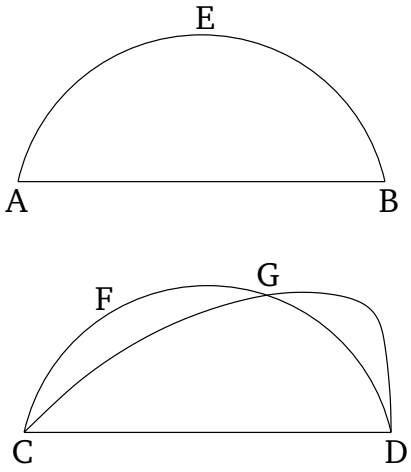
Book 3
Proposition 24

Similar segments of circles on equal straight-lines are equal to one another.



For let AEB and CFD be similar segments of circles on the equal straight-lines AB and CD (respectively). I say that segment AEB is equal to segment CFD.

For if the segment AEB is applied to the segment CFD, and point A is placed on (point) C, and the straight-line AB on CD, then point B will also coincide with point D, on account of AB being equal to CD. And if AB coincides with CD then the segment AEB will also coincide with CFD. For if the straight-line AB coincides with CD, and the segment AEB does not coincide with CFD, then it will surely either fall inside it, outside (it), or it will miss like CGD (in the figure), and a circle (will) cut (another) circle at more than two points. The very thing is impossible [Prop. 3.10]. Thus, if the straight-line AB is applied to CD, the segment AEB cannot not also coincide with CFD. Thus, it will coincide, and will

be equal to it [C.N. 4].

Thus, similar segments of circles on equal straight-lines are equal to one another. (Which is) the very thing it was required to show.