

Book 10

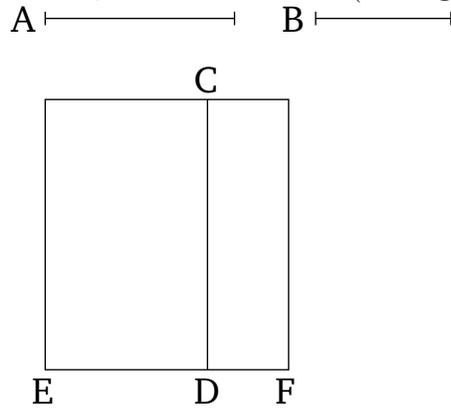
Proposition 23

A (straight-line) commensurable with a medial (straight-line) is medial.

Let A be a medial (straight-line), and let B be commensurable with A . I say that B is also a medial (straight-line).

Let the rational (straight-line) CD be set out, and let the rectangular area CE , equal to the (square) on A , have been applied to CD , producing ED as width. ED is thus rational, and incommensurable in length with CD [Prop. 10.22]. And let the rectangular area CF , equal to the (square) on B , have been applied to CD , producing DF as width. Therefore, since A is commensurable with B , the (square) on A is also commensurable with the (square) on B . But, EC is equal to the (square) on A , and CF is equal to the (square) on B . Thus, EC is commensurable with CF . And as EC is to CF , so ED (is) to DF [Prop. 6.1]. Thus, ED is commensurable in length with DF [Prop. 10.11]. And ED is rational, and incommensurable in length with CD . DF is thus also rational [Def. 10.3], and incommensurable in length with DC [Prop. 10.13]. Thus, CD and DF are rational, and commensurable in square only. And the square-root of a (rectangle contained) by rational (straight-lines which are) commensurable in square only is medial [Prop. 10.21]. Thus, the square-root of the (rectangle contained) by CD and DF is medial. And the square on B is equal to the (rectangle contained) by

CD and DF . Thus, B is a medial (straight-line).



Corollary

And (it is) clear, from this, that an (area) commensurable with a medial area is medial.