

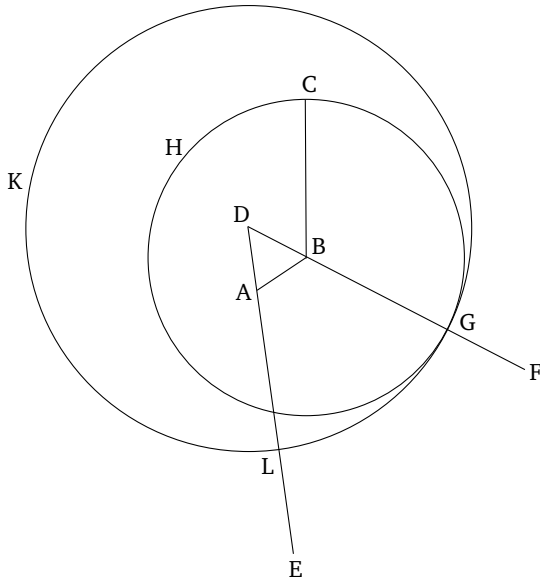
Book 1

Proposition 2

To place a straight-line equal to a given straight-line at a given point (as an extremity).

Let A be the given point, and BC the given straight-line. So it is required to place a straight-line at point A equal to the given straight-line BC .

For let the straight-line AB have been joined from point A to point B [Post. 1], and let the equilateral triangle DAB have been constructed upon it [Prop. 1.1]. And let the straight-lines AE and BF have been produced in a straight-line with DA and DB (respectively) [Post. 2]. And let the circle CGH with center B and radius BC have been drawn [Post. 3], and again let the circle GKL with center D and radius DG have been drawn [Post. 3].



Therefore, since the point B is the center of (the circle)

CGH , BC is equal to BG [Def. 1.15]. Again, since the point D is the center of the circle GKL , DL is equal to DG [Def. 1.15]. And within these, DA is equal to DB . Thus, the remainder AL is equal to the remainder BG [C.N. 3]. But BC was also shown (to be) equal to BG . Thus, AL and BC are each equal to BG . But things equal to the same thing are also equal to one another [C.N. 1]. Thus, AL is also equal to BC .

Thus, the straight-line AL , equal to the given straight-line BC , has been placed at the given point A . (Which is) the very thing it was required to do.