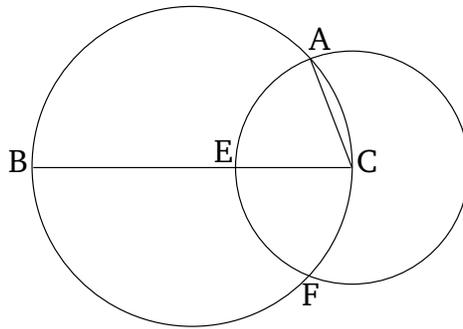


Book 4

Proposition 1

To insert a straight-line equal to a given straight-line into a circle, (the latter straight-line) not being greater than the diameter of the circle.

D



Let ABC be the given circle, and D the given straight-line (which is) not greater than the diameter of the circle. So it is required to insert a straight-line, equal to the straight-line D , into the circle ABC .

Let a diameter BC of circle ABC have been drawn.[†] Therefore, if BC is equal to D then that (which) was prescribed has taken place. For the (straight-line) BC , equal to the straight-line D , has been inserted into the circle ABC . And if BC is greater than D then let CE be made equal to D [Prop. 1.3], and let the circle EAF have been drawn with center C and radius CE . And let CA have been joined.

Therefore, since the point C is the center of circle EAF , CA is equal to CE . But, CE is equal to D . Thus, D is also equal to CA .

Thus, CA , equal to the given straight-line D , has been

inserted into the given circle ABC . (Which is) the very thing it was required to do.