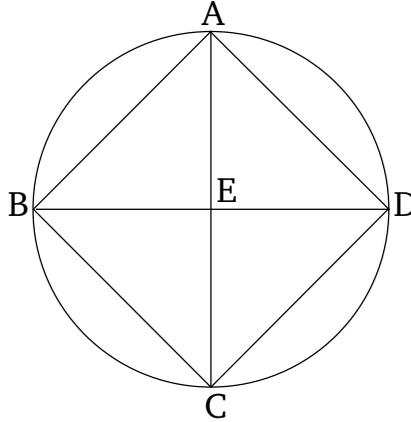


Book 4 Proposition 6

To inscribe a square in a given circle.



Let $ABCD$ be the given circle. So it is required to inscribe a square in circle $ABCD$.

Let two diameters of circle $ABCD$, AC and BD , have been drawn at right-angles to one another.[†] And let AB , BC , CD , and DA have been joined.

And since BE is equal to ED , for E (is) the center (of the circle), and EA is common and at right-angles, the base AB is thus equal to the base AD [Prop. 1.4]. So, for the same (reasons), each of BC and CD is equal to each of AB and AD . Thus, the quadrilateral $ABCD$ is equilateral. So I say that (it is) also right-angled. For since the straight-line BD is a diameter of circle $ABCD$, BAD is thus a semi-circle. Thus, angle BAD (is) a right-angle [Prop. 3.31]. So, for the same (reasons), (angles) ABC , BCD , and CDA are also each right-angles. Thus, the quadrilateral $ABCD$ is right-angled. And it was also shown (to be) equilateral. Thus, it is a square [Def. 1.22]. And it has been inscribed in circle $ABCD$.

Thus, the square $ABCD$ has been inscribed in the given circle. (Which is) the very thing it was required to do.