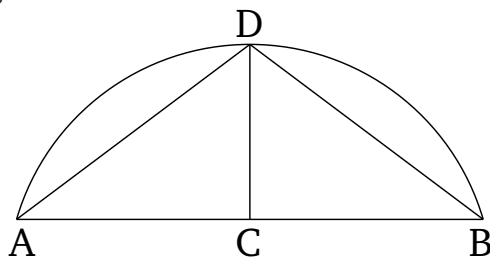# Book 3
Proposition 30

To cut a given circumference in half.

Let ADB be the given circumference. So it is required to cut circumference ADB in half.

Let AB have been joined, and let it have been cut in half at (point) C [Prop. 1.10]. And let CD have been drawn from point C, at right-angles to AB [Prop. 1.11]. And let AD, and DB have been joined.

And since AC is equal to CB, and CD (is) common, the two (straight-lines) AC, CD are equal to the two (straight-lines) BC, CD (respectively). And angle ACD (is) equal to angle BCD. For (they are) each right-angles. Thus, the base AD is equal to the base DB [Prop. 1.4]. And equal straight-lines cut off equal circumferences, the greater (circumference being equal) to the greater, and the lesser to the lesser [Prop. 1.28]. And the circumferences AD and DB are each less than a semi-circle. Thus, circumference AD (is) equal to circumference DB.

Thus, the given circumference has been cut in half at point D. (Which is) the very thing it was required to do.