

# MT 453 Elements

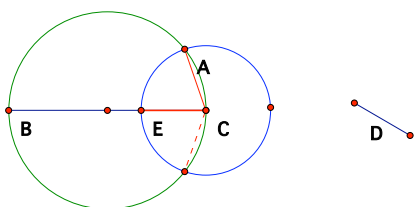
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## Proposition IV.1

*In a given circle, how to draw a chord equal to a given length that is NOT greater than a diameter of a circle.*



Let  $BC$  be the diameter of a circle and  $D$  be our given segment.

**Case 1:** If  $D = BC$ , we are done.

**Case 2:** If  $D < BC$ .

Draw  $CE = D$  (**prop. I.3**) cutting  $BC$  at  $E$  to create  $CE$ .

Draw a circle with center  $C$  and radius  $CE$ . (**post. 3**)

Where these 2 circles meet call  $A$ .

Draw  $CA$ . (**post. 1**)

$CA = CE = D$ . (**c.n. 1**)

Q.E.F.

**Comment:** We can do this 2 times since circles meet at 2 spots.