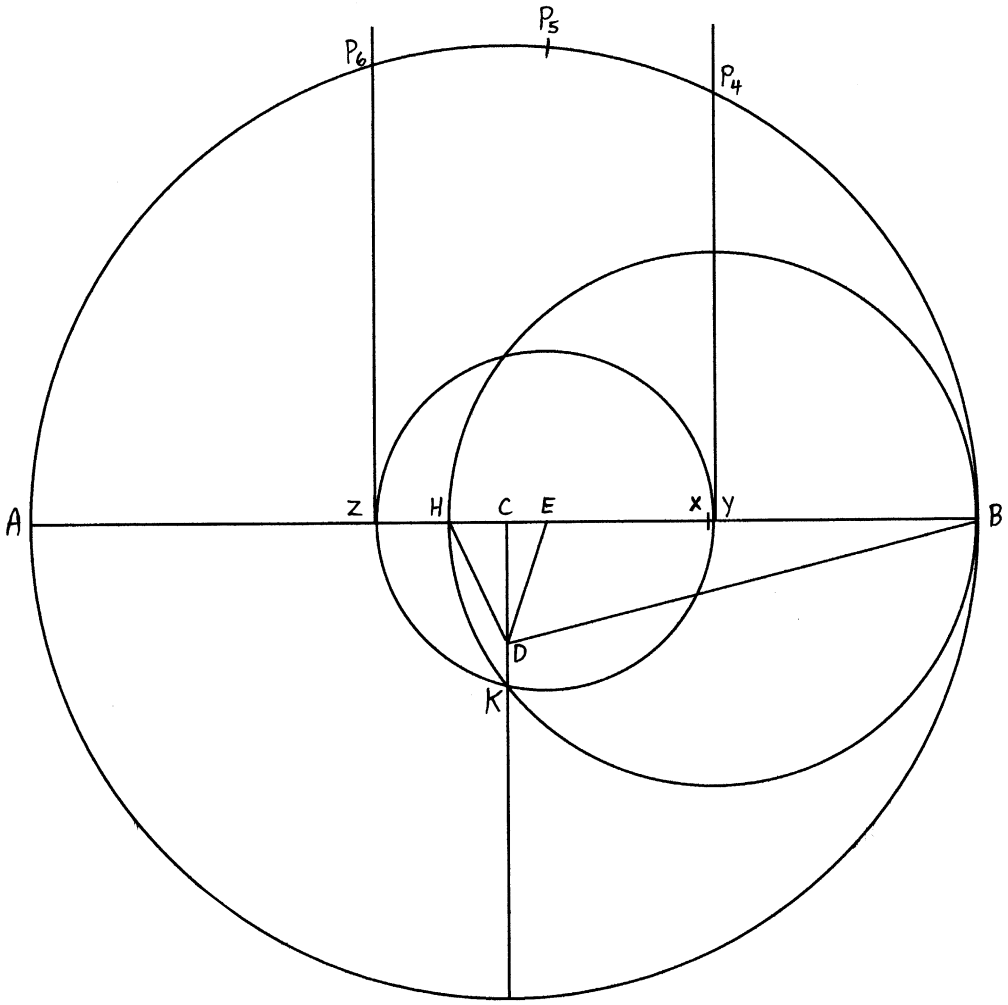
Construction of a 17-gon[1]

1. Construct a circle with diameter AB and center C.
2. Construct a radius, perpendicular to AB, with point D on that radius such that $\overline{CD} = \frac{1}{4}\,\overline{CA}$.
3. Find point E on BC such that $\angle EDC = \frac{1}{4}\,\angle BDC$.
4. Find point H on AC such that $\angle EDH$ is half a right angle (45°).
5. Draw a circle with BH as diameter, labeling its center as X and its intersection with line CD extended as K.
6. Draw a circle with E as its center and EK as its radius. Label this circle's intersection with BC as Y, and its intersection with AC as Z. (Note: X and Y are close, but do not actually coincide.)
7. Draw a line perpendicular to AB from Y and label where it crosses the original circle as P_4.
   Draw a line perpendicular to AB from Z and label where it crosses the original circle as P_6 (on the same side of AB as P_4).
8. Points P_4 and P_6 are the 4th and 6th vertices of the desired 17-gon. Find P_5 by bisecting $\angle P_4CP_6$.
9. Find the remaining vertices of the 17-gon by marking off the distance $\overline{P_4P_5}$ around the perimeter of the circle. If done perfectly, point B will be the first vertex (P_1), and the radius CA bisects a side of the 17-gon.



[1] This particular construction is by H.W. Richmond (*Mathematische Annalen*, volume 67, 1909).
In 1796, Carl Friedrich Gauss proved that the 17-gon was constructible, but he did not provide a method for doing it. In 1800, Johannes Erchinger provided the first method for constructing the 17-gon.