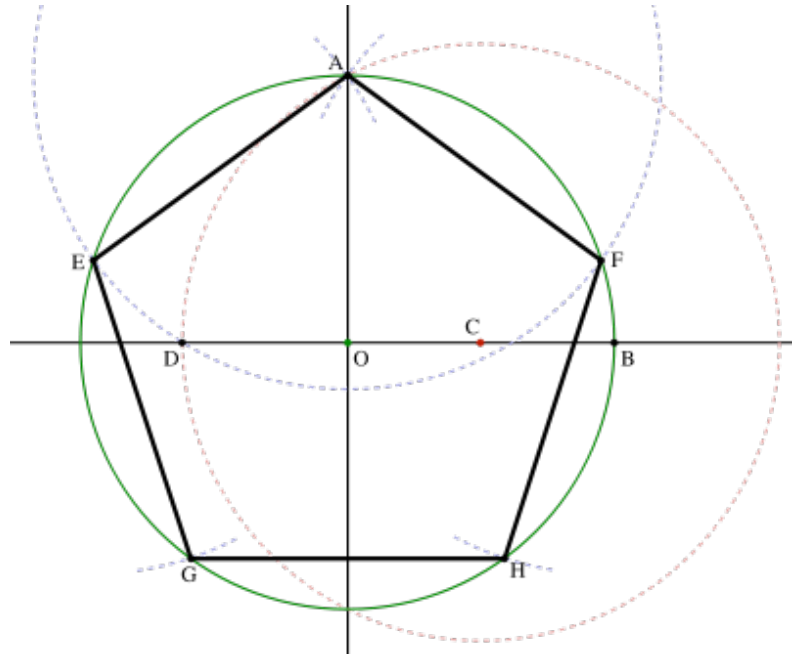


A regular pentagon is constructible using a compass and straightedge, either by inscribing one in a given circle or constructing one on a given edge. This process was described by Euclid in his *Elements* circa 300 BC.

One method to construct a regular pentagon in a given circle is as follows:

1. Draw a circle in which to inscribe the pentagon and mark the center point O . (This is the green circle in the diagram to the right).
2. Choose a point A on the circle that will serve as one vertex of the pentagon. Draw a line through O and A .
3. Construct a line perpendicular to the line OA passing through O . Mark its intersection with one side of the circle as the point B .
4. Construct the point C as the midpoint of O and B .
5. Draw a circle centered at C through the point A . Mark its intersection with the line OB (inside the original circle) as the point D .
6. Draw a circle centered at A through the point D . Mark its intersections with the original (green) circle as the points E and F .
7. Draw a circle centered at E through the point A . Mark its other intersection with the original circle as the point G .
8. Draw a circle centered at F through the point A . Mark its other intersection with the original circle as the point H .
9. Construct the regular pentagon $AEGHF$.



After forming a regular convex pentagon, if you join the non-adjacent corners (drawing the diagonals of the pentagon), you obtain a pentagram, with a smaller regular pentagon in the center. Or if you extend the sides until the non-adjacent ones meet, you obtain a larger pentagram.

An alternative method of construction is illustrated in the animation: Constructing a regular pentagon with compass and straightedge.

Pentagons in nature