Euclidean Constructions and Constructibility Axioms

There are three elementary steps that you can do with the classical tools (an unmarked straightedge and non – collapsible compass):

- Given two points, use the straightedge to construct the line passing through them.

- Given a point (center) and a line segment (radius), use the compass to construct a circle around the given point with the given radius.

- You can mark the points of intersection of lines and circles with each other.

A **classical geometric construction** starts with a given plane figure and yields the desired object after a finite number of these elementary steps.

In classical Greek geometry the compass must be collapsible; in contrast, modern treatments of constructions generally assume that the compass is noncollapsible (one can lift it off the paper without changing the distance between the two points of the compass). The following reference shows that one any construction that is possible with an unmarked straightedge and a non – collapsible compass can also be done with an unmarked straightedge and a collapsible compass:

https://en.wikipedia.org/wiki/Compass_equivalence_theorem