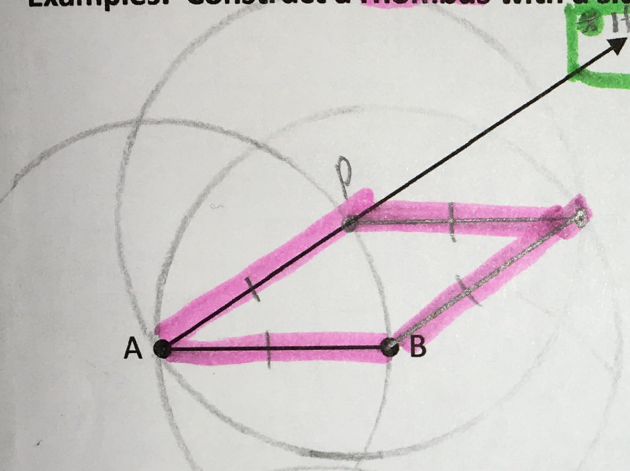
Constructions

Construction is the act of drawing geometric shapes using only a compass and straight edge. No measuring of lengths or angles is allowed.

A compass is a tool to draw circles, which show ALL points that are equidistant from a specified center point. New points are constructed only at intersections of existing circles or lines (segments, rays). Construction is the foundation of proof; the circles and lines in the construction prove that what we have constructed is truly what we are saying it is.

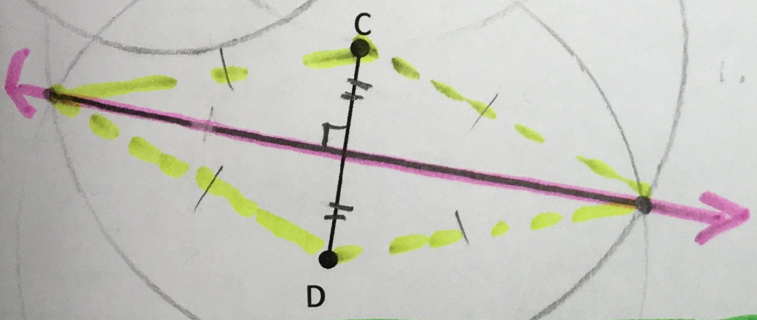
Examples: Construct a rhombus with a side length of $\overline{AB}$. quadrilateral w/ 4 ≅ sides



* If no side length given, pick one!

1. set compass AB (the length of EACH side)
2. Draw circle around A (finds ALL points AB from A)
3. Mark intersection of circle & ray (P)
4. Draw circles with radius AB around B & P.
5. Intersection is the ONLY point that is distance AB from BOTH B & P.

Construct the perpendicular bisector of $\overline{CD}$. cut in HALF & at 90° ∠ (Diagonals of a RHOMBUS are ⊥ & bisect each other!)



1. Pick any radius to set side length of rhombus
2. Draw ≅ circles centered @ C & D. (Finds ALL points same distance from BOTH D & C)
3. Mark intersection points (these are end points of OTHER diagonal)

* Note: If I just want ⊥ not bisect extend $\overline{DC}$ first so it can be HALF of bisected segment.

* we really just constructed a rhombus. The diagonals are ⊥ bisectors of each other!

Most constructions can based on a RHOMBUS and its properties.

- diagonals bisect each other
- diagonals are ⊥ to each other
- opposite sides //
- opposite ∠s ≅
- diagonals bisect the ∠s of rhombus