

CONSTRUCTION OF A PENTAGON/DECAGON using square, compass and straight-edge

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1. Construct lines \overline{AB} and \overline{CD} perpendicular to one another and intersecting somewhere in the middle of the page.
 2. Construct a circle with center at point H .
 3. Construct lines \overline{EX} and \overline{LF} tangent to the circle and parallel to lines \overline{AB} and \overline{CD} , respectively.
 4. Construct diagonal lines \overline{GH} and \overline{LX} to find point I , the center of square $LGXH$. Construct line \overline{JK} to bisect the square.
 5. Set compass to length of line between points K and L (it's not necessary to actually draw line \overline{KL}). Construct arc from point L to point M , with compass point set on point K .
 6. Set compass to distance between points L and M . With compass point on L , construct arc that intersects the circle at points N and O . Setting compass point on points N and O , construct arcs that intersect the circle at points P and Q .
 7. Construct the sides of the pentagon: \overline{LV} , \overline{VQ} , \overline{QP} , \overline{PN} , \overline{NL} .
- for the decagon, continue on...
8. Set compass on points P and Q to construct arcs x and z , respectively. If you've been accurate, arcs x and z will intersect on line \overline{AB} .
 9. Set compass on point R and mark points s and w . Set compass on points s and w and mark points T and u .
 10. Construct lines \overline{LV} , \overline{UV} , \overline{VW} , \overline{WQ} , \overline{QR} , etc.