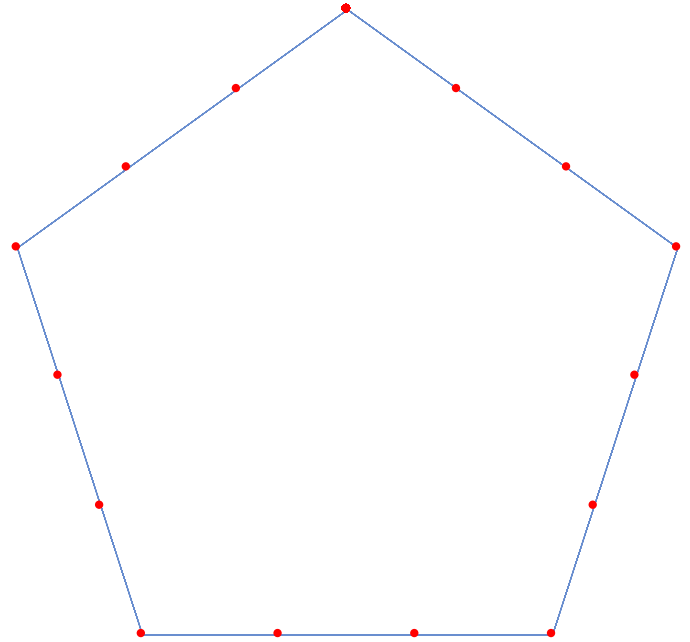
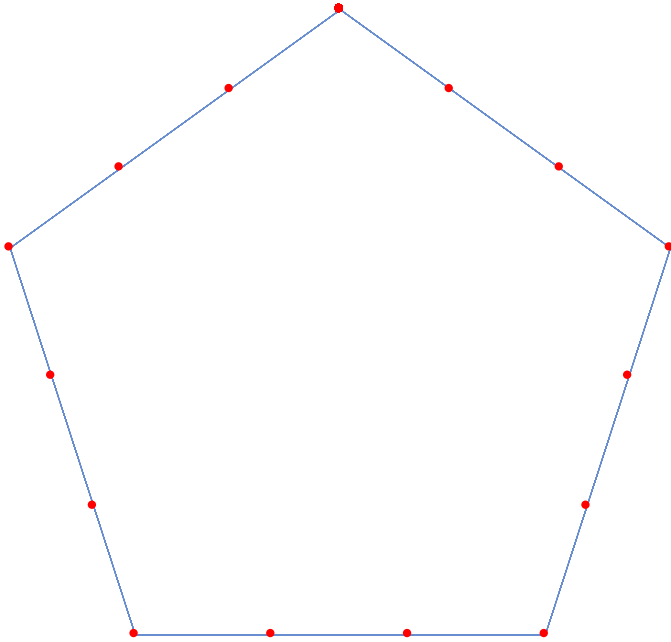


Pencil and Ruler Exercise: **Changing P (subdivisions between points)**

for fixed n (vertices in polygon), S (subdivisions between vertices) and J (polygon vertex jumps)

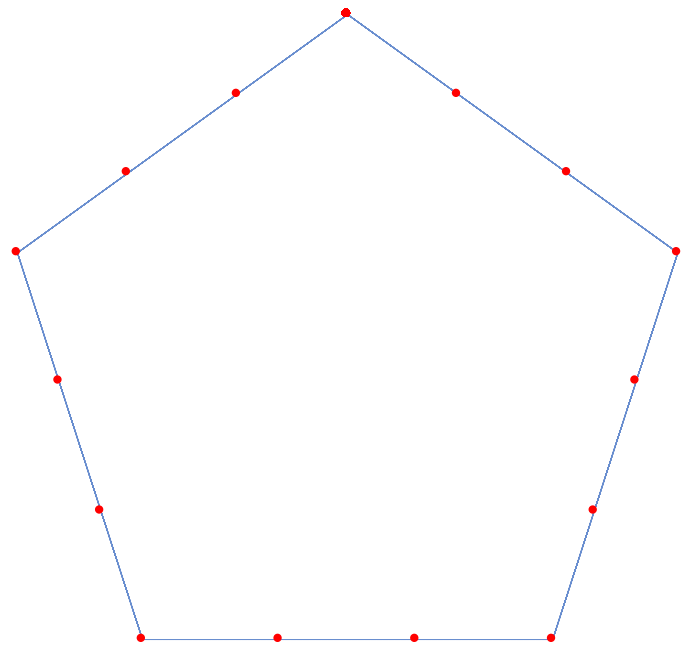
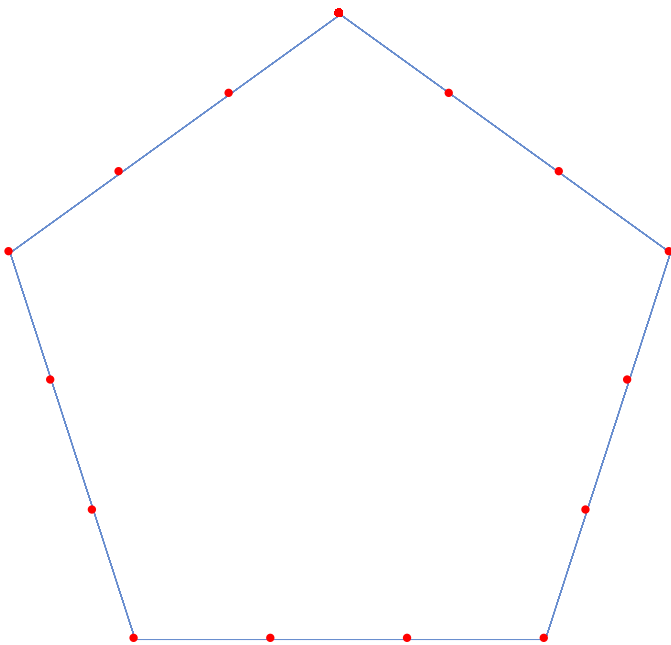
FACT: All four subdivision dot-plots have the same number of n , $n = \underline{\hspace{1cm}}$, the same number for S , $S = \underline{\hspace{1cm}}$, and the same number for J , $J = \underline{\hspace{1cm}}$.

Instructions: For each P , start at the top dot and *draw each image from point to point* with pencil and ruler.



$P = 2$. Are all subdivision points used? $\underline{\hspace{1cm}}$. SCF = $\underline{\hspace{1cm}}$.

$P = 4$. Are all subdivision points used? $\underline{\hspace{1cm}}$. SCF = $\underline{\hspace{1cm}}$.



$P = 5$. Are all subdivision points used? $\underline{\hspace{1cm}}$. SCF = $\underline{\hspace{1cm}}$.

$P = 7$. Are all subdivision points used? $\underline{\hspace{1cm}}$. SCF = $\underline{\hspace{1cm}}$.

NOTE: SCF is calculated as: $SCF = \text{GCD}(n \cdot S / \text{VCF}(n, J), P)$ where $\text{VCF} = \text{GCD}(n, J)$ and GCD is the greatest common divisor (also called greatest common factor) between the two numbers. (In the above images, $\text{VCF} = 1$.) One can see SCF as the bottom of the fraction of subdivisions used (so for example, if $1/2$ of the subdivisions are used, $SCF = 2$).