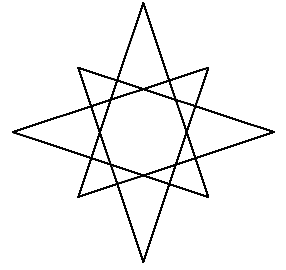


Searching for Squares inside a Modified Brunes Star

The Brunes star, a copy of which is shown at the right, was used to introduce the difference between S and P . The image has a fascinating history behind it as noted in the [Brunes star challenge question](#).

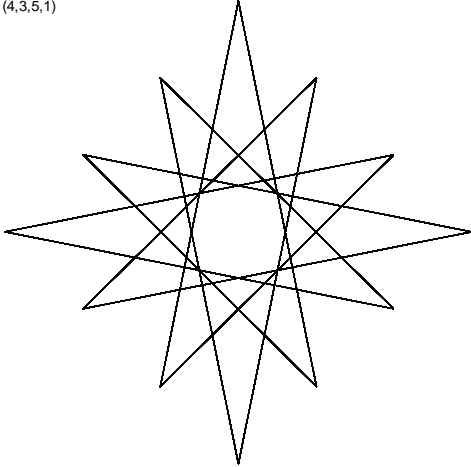


You will note that $(n, S, P, J) = (4, 2, 3, 1)$ produced this image. It has (among other things) two internal squares that are plainly visible.

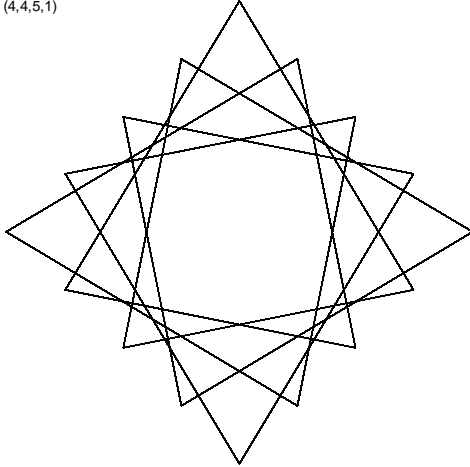
Consider a modified Brunes star given by $n = 4, J = 1, S > 2$ and $S < P < 2S$ with $SCF = 1$. The images below are 9 of 10 possible given $3 \leq S \leq 7$ ((4, 6, 9, 1) was omitted to save space).

CLAIM: Each such image creates S internal squares. *Can you explain why this is true?* Hint: How are lines k and $S+k$ related?

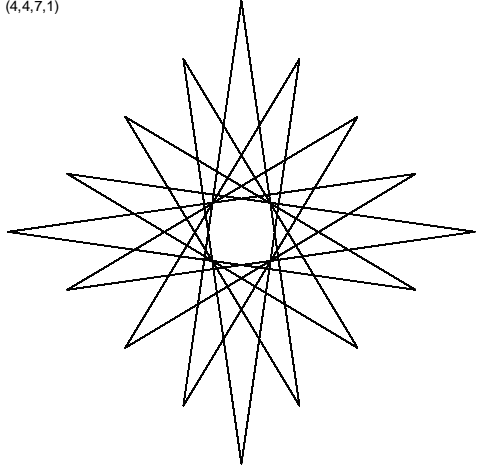
(4,3,5,1)



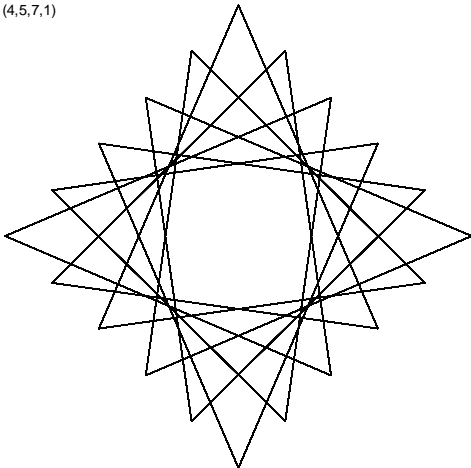
(4,4,5,1)



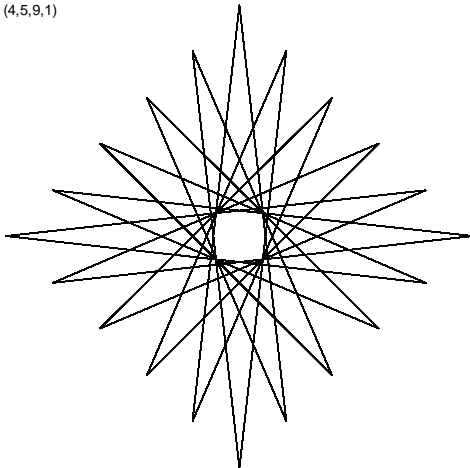
(4,4,7,1)



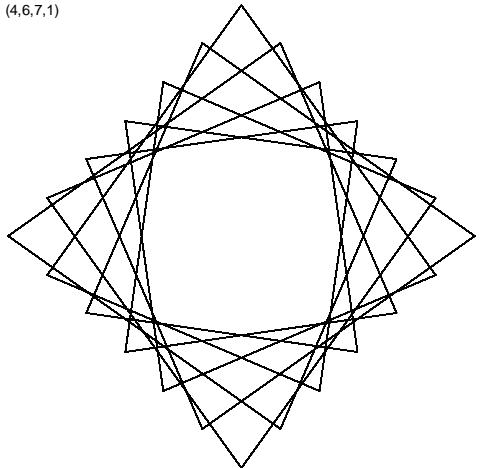
(4,5,7,1)



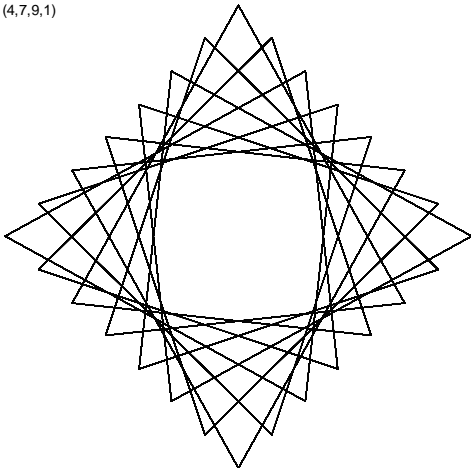
(4,5,9,1)



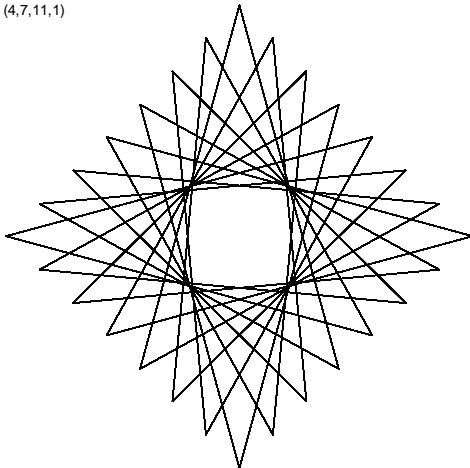
(4,6,7,1)



(4,7,9,1)



(4,7,11,1)



(4,7,13,1)

