Centered-Point Flower Images when *P* is a multiple of *S*

In the traditional string art model, the image is a polygon or star whenever ***P*** is a multiple of ***S***, ***P*** = ***m·S***. This is not always true with Centered-Point Flowers. We focus on ***n*** = 11 and 12 in order to see what differences emerge when ***n*** is prime versus composite. Instead of being exhaustive with images, this explainer examines some of the general patterns that are laid out in the table showing what happens given ***m*** ≤ 3***n***/2. (Note: ***P*** = ***m·S*** implies SCF = ***S*** so there are 3***n*** possible lines regardless of ***S***. These images use ***S*** = 1, so ***P*** = ***m***.)

	n = 11		***n*** = 12	
m	Image*	3***n***-***m***	Image	3***n***-***m***
1	VF = 11 RP	32	VF = 12 RP	35
2	11 R	31	6 R	34
3	11 P	30	12 P	33
4	11,2 RS	29	**3 T v.1**	32
5	VF = 11 RP	28	VF = 12 RP	31
6	11,2 S	27	Hexagon	30
7	11,3 RS	26	12,3 RS	29
8	11,2 RS	25	**3 T v.2**	28
9	11,3 S	24	Square	27
10	11,4 RS	23	6,2 RS	26
11	**Obtuse Δ**	22	12,3 RS	25
12	11,4 S	21	Triangle	24
13	**11,5 RS**	20	**12,5 RS**	23
14	11,4 RS	19	6,2 RS	22
15	11,5 S	18	12,5 S	21
16	11,5 RS	17	6 R	20
17			12,5 RS	19
18			Vertical	18

*Acronyms: #,## ***n*** ,***J*** -star; P-polygon; R-rays; RS-star with rays; S-star; T-equilateral triangle; VF-Vertex Frame. **BOLD images are shown below**.

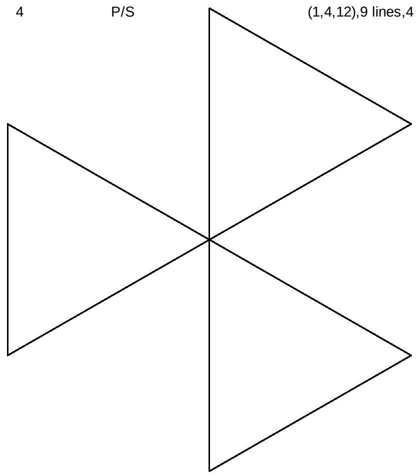
Images are symmetric across 3***n***/2. To put it another way, ***m*** and 3***n***-***m*** produce the same static image, with the only difference being the way in which the image is drawn.

When ***n*** is prime, all polygons and stars with and without rays are represented. The only unusual image occurs at ***m*** = 11, SCF = 11. This produces the obtuse triangle at left below that goes from 11-gon vertices 11&0-Center-8-11&0 (the 3 lines end at ***P*** = 11, 22, 33).

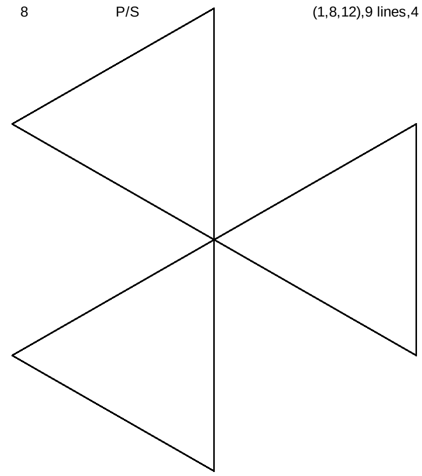
When ***n*** is composite, some ***n***,***J***-stars that are not possible without rays, are possible with rays (such as those associated with ***m*** = 7, 10, 11, and 14). Note however that one cannot draw a 6,2 or 12,3 star without using the center. Instead, one obtains a triangle (***m*** = 12) or square (***m*** = 9) since 12·3 = 9·4 = 36 = 3***n***. The mirror-image 3 equilateral triangles, ***m*** = 4 and ***m*** = 8, are shown below.

Each ribbed star is drawn twice in the table (and twice more for ***m*** > 3***n***/2). The bottom two images are sharpest ribbed stars, 11,5 and 12,5, both of which can be drawn with ***m*** = 13.

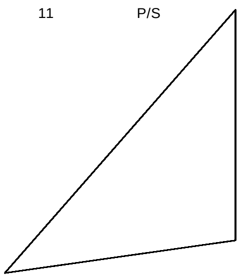
4 P/S (1,4,12),9 lines,4 SCF



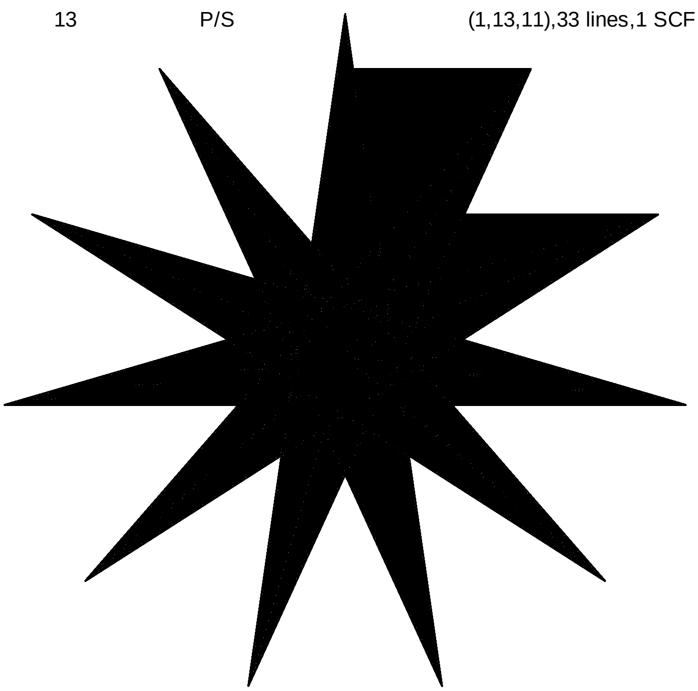
8 P/S (1,8,12),9 lines,4 SCF



11 P/S (1,11,11),3 lines,11 SCF



13 P/S (1,13,11),33 lines,1 SCF



13 P/S (1,13,12),36 lines,1 SCF