

# A Line Analysis of a $J = 0$ Image

These images examine  $S = 5$ ,  $P = 7$  for two jump patterns, to focus additional attention on the  $J = 0$  jump introduced in the prior [explainer](#). It used the blue image to provide a heuristic basis for what happens if a jump in a jump set is 0. The table to the left provides the subdivision endpoints for the **30 lines in the red model** and the **45 lines in the blue one**. The first two

Line	Sub End	Vertices used	
		Single	Triple
1	7	7	7
2	14	14	14
3	21	21	21
4	28	28	28
5	35	5	35
6	42	12	42
7	49	19	4
8	56	26	11
9	63	3	18
10	70	10	25
11	77	17	32
12	84	24	39
13	91	1	1
14	98	8	8
15	105	15	15
16	112	22	22
17	119	29	29
18	126	6	36
19	133	13	43
20	140	20	5
21	147	27	12
22	154	4	19
23	161	11	26
24	168	18	33
25	175	25	40
26	182	2	2
27	189	9	9
28	196	16	16
29	203	23	23
30	210	0	30
31	217		37
32	224		44
33	231		6
34	238		13
35	245		20
36	252		27
37	259		34
38	266		41
39	273		3
40	280		10
41	287		17
42	294		24
43	301		31
44	308		38
45	315		0

$=\text{MOD}(\text{SubEnd},30)$   
 $=\text{MOD}(\text{SubEnd},45)$

images note subdivision endpoint (or range of endpoints) at vertices.

**Single jump of  $J = 2$ .** The image is created in 7 rotations around the circle (the **5<sup>th</sup> line** starts the second rotation because the number jumps from larger to smaller). Since  $P > S$ , the hexagonal VF is not included in the image.

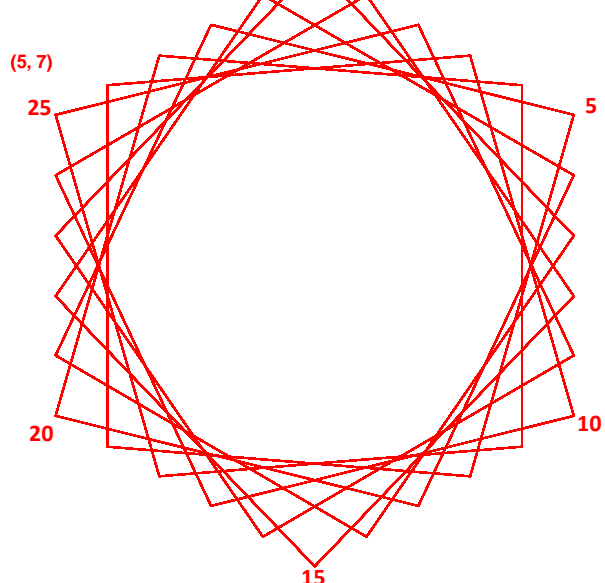
**Triple jump of (2,2,0).** The VF is once again a hexagon at even vertices of the 12-gon. But note that 2, 6, and 10 have a single number attached, while 4, 8, and 0 have a range of numbers attached. This occurs because each pair of 2 vertex jumps is followed by a 0 vertex jump.

With the table, it is easy to see that the lines that were one subdivision on either side of vertices 4, 8, and 0 are the **28<sup>th</sup>**, **43<sup>rd</sup>**, and **13<sup>th</sup> lines**, respectively, **highlighted in yellow**.

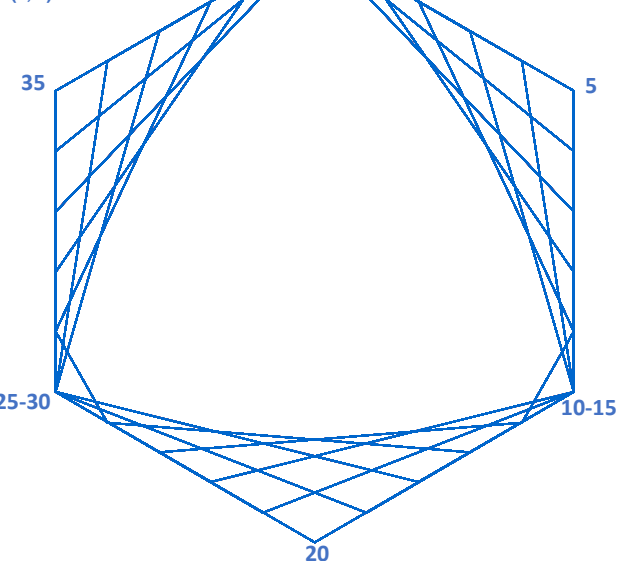
In contrast to **red**, the **blue** image includes the VF. It appears that there are 3 lines **leaving** vertex 0 (ending at subdivision endpoints **5, 6, and 7**) rather than one in the single jump model (ending at **7**). In fact, there are **six** all **highlighted in green**. The attribute of each is that it ends at a subdivision between **2** and **7** and therefore start 7 subdivisions earlier, between **40** and **45 = 0**. Note that all but two of these **blue lines (1 and 33)** lie on top of one another on the 1<sup>st</sup> VF line from vertex 0 to 2.

The final image superimposes **blue** on **red**. Each shares 4 lines at the 2, 6, and 10 curves. For example, **red Line 1** and **blue Line 1** coincide, as do **14** and **14**, **27** and **27**, and **10** and **40** at curve 2.

(S, P) Hours Jumped 2



(S, P) Repeated Hour Jumps (2, 2, 0) 4 VCF



(S, P) Repeated Hour Jumps (2, 2, 0) 4 VCF

