Lattice: Patterns in whole odd numbers

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Abstract
Lattice: Patterns in whole odd numbers using grid pattern recognition.

Introduction
The author is visually educated and is not a mathematician. Therefore the investigation uses artistic skills rather than mathematical, however pattern recognition is used in both fields of research and the cross over from one field of study to the other has in previous centuries been much closer.

The research may prove useful for professional researchers working in the field of geometry or pure mathematics, or it may simply be dismissed as simple artistic sketches that have no practical relevance.

Materials and methods

Odd Numbers	Squared	Plus 2......................			
1	**1**	**3**	**5**	**7**	**9**
3	9	11	13	15	17
5	25	27	29	31	33
7	49	51	53	55	57
9	81	83	85	87	89

Grid used to determine lattice framework

The grid which is used to determine the lattice patterns within each odd number is built by squaring odd numbers and then adding 2. (Please see above.)

1	1	3	5	7	9	11	13	15
3	9	11	13	15	17	19	21	23
5	25	27	29	31	33	35	37	39
7	49	51	53	55	57	59	61	63
9	81	83	85	87	89	91	93	95
11	121	123	125	127	129	131	133	135
13	169	171	173	175	177	179	181	183
15	225	227	229	231	233	235	237	239

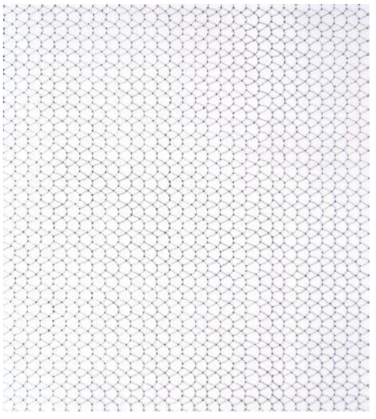
Number 3

To determine the pattern of 3 within the grid, mark any number divisible by three. A simple pattern emerges.

1	1	3	5	7	9	11	13	15	17
3	9	11	13	15	17	19	21	23	25
5	25	27	29	31	33	35	37	39	41
7	49	51	53	55	57	59	61	63	65
9	81	83	85	87	89	91	93	95	97
11	121	123	125	127	129	131	133	135	137
13	169	171	173	175	177	179	181	183	185
15	225	227	229	231	233	235	237	239	241
17	289	291	293	295	297	299	301	303	305
19	361	363	365	367	369	371	373	375	377
21	441	443	445	447	449	451	453	455	457
23	529	531	533	535	537	539	541	543	545
25	625	627	629	631	633	635	637	639	641
27	729	731	733	735	737	739	741	743	745
29	841	843	845	847	849	851	853	855	857

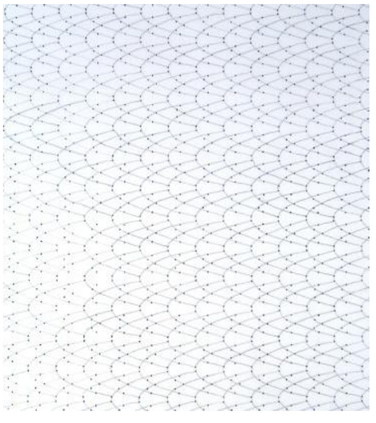
Number 5

Any odd whole number can be used, (5 is used above, again each number divisible by five is marked).

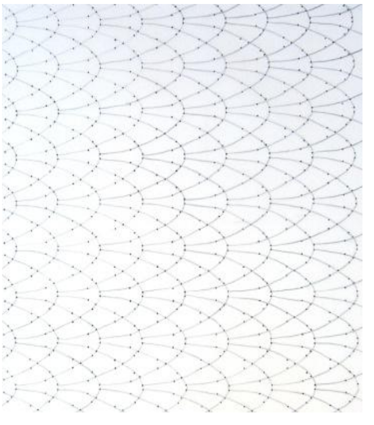


Number 3

Number 5



Number 7



Number 11

Number 13

The patterns can be made more pictorially pleasing by abstracting the position of the grid numbers and overlaying a single curved line over each sequence, which enhances the pattern of the lattice. This has been completed for 3,5,7,11 and 13.

Please note the above are all prime numbers.

3	9	11
5	25	27
7	49	51
9	81	83

Number 3

Each prime lattice appears to have a similar composition. It is symmetrical and importantly the pattern only returns to the base line once, when the pattern begins again. (For 3 the base line begins at 9 and returns at 81 when the pattern restarts)

9	81	83	85	87	89	91	93	95
11	121	123	125	127	129	131	133	135
13	169	171	173	175	177	179	181	183
15	225	227	229	231	233	235	237	239
17	289	291	293	295	297	299	301	303
19	361	363	365	367	369	371	373	375
21	441	443	445	447	449	451	453	455
23	529	531	533	535	537	539	541	543
25	625	627	629	631	633	635	637	639
27	729	731	733	735	737	739	741	743

Number 9

For square numbers the composition is also symmetrical, but the pattern returns to the base line on more than one occasion. (For 9 the base line begins at 81, the composition returns twice first at 225 and then at 441 and finally returns at 729 to commence the sequence again.) These base numbers can be overlaid by the 3 lattice, since they have corresponding positions, therefore not surprisingly there is a correlation between the lattice of 3 and of its square 9.

225	227	229	231	233	235	237	239	241	243	245	247	249	251
289	291	293	295	297	299	301	303	305	307	309	311	313	315
361	363	365	367	369	371	373	375	377	379	381	383	385	387
441	443	445	447	449	451	453	455	457	459	461	463	465	467
529	531	533	535	537	539	541	543	545	547	549	551	553	555
625	627	629	631	633	635	637	639	641	643	645	647	649	651
729	731	733	735	737	739	741	743	745	747	749	751	753	755
841	843	845	847	849	851	853	855	857	859	861	863	865	867
961	963	965	967	969	971	973	975	977	979	981	983	985	987
1089	1091	1093	1095	1097	1099	1101	1103	1105	1107	1109	1111	1113	1115
1225	1227	1229	1231	1233	1235	1237	1239	1241	1243	1245	1247	1249	1251
1369	1371	1373	1375	1377	1379	1381	1383	1385	1387	1389	1391	1393	1395
1521	1523	1525	1527	1529	1531	1533	1535	1537	1539	1541	1543	1545	1547
1681	1683	1685	1687	1689	1691	1693	1695	1697	1699	1701	1703	1705	1707
1849	1851	1853	1855	1857	1859	1861	1863	1865	1867	1869	1871	1873	1875
2025	2027	2029	2031	2033	2035	2037	2039	2041	2043	2045	2047	2049	2051

Number 15

All odd numbers that have three or more factors have lattice compositions which are slightly different from both primes and squares. Both primes and squared numbers have only two marked positions in each column within the body of the grid. Whereas number15 has four marked positions in two columns, this is important since the column with, 375, 855, 975, 1695 represents factor 5 and 315, 555, 1395, 1875 represents factor 3.

As can be seen from the example (number 15) the pattern does not return to the baseline until the pattern begins again, similar to prime numbers.

It should be noted that each repeated pattern has the same number of marked places within the grid as the number it is illustrating, 3 has 3, 5 has 5, 15 has 15 and so on.

Results and Discussions

A lattice can be created for each odd number using the grid method of composition. Depending on the type of whole odd number, different patterns emerge. The most pleasing to the eye appear to be primes.

Conclusion

The symmetrical patterns that are created by using the Lattice grid, particularly when curves are overlaid and points or dot positions are used rather than numbers, have a resemblance to certain aspects of the natural world; the scales of fish, pinecone seed husk arrangements and the breast feathers of most birds. This observation may require additional research.

Acknowledgement

None

References

None