

Square Pattern

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Abstract - In this page I developed a pattern that look alike square. This pattern can be used in many ways such as finding square, triangular number, odd number, etc. It can also used to find multiples of any number. This pattern I developed is may be very useful to small learning children. With this pattern they can easily know what is odd number and even number.

Keyword - triangular number, odd number, even number, square, tetrahedral number.

I. INTRODUCTION

We have known about the pascal's triangles^[3] and many mathematical pattern. Pattern are used in many useful things, that pascal's triangles^[3] can be used to find combination^[2], triangular numbers^[5], binomial expression^[1], etc.

In this page I present a pattern that is form by whole numbers by writing in a specific ways In this pattern we can find some of sequences and number that will be easily noted by kids and children. I represent this page mainly for kids, with this they can find out some of the sequences and number easily in a specific ways. It can also help us to find the multiples of any number in a specific pattern. We can even find the square of a number by counting the number of numbers in the whole square pattern.

II. CONCEPT AND MAKING OF SQUARE PATTERN

The square pattern is a square form of pattern that is form by whole numbers. The number of numbers on the rows and the column are equal so it is called a square pattern. The number on the right side of the diagonal of the pattern are repeating number while the number on the left are not repeating. The pattern is just like a square.

The formation of the pattern is quite easy. Its write is always begin from the top (the rows of zeroes). As it is form by only whole numbers, the first we should write is zero and then write another zero on the right side of zero, write one on the down of the second zero, then write two on the left side of the one. We form this pattern by performing this step. Its number become larger and larger according to its places.

0	0	0	0	0	0
2	1	1	1	1	1
4	3	2	2	2	2
6	5	4	3	3	3

8	7	6	5	4	4
10	9	8	7	6	5

The number on the same colour must be write first.

III.PROPERTY

1) sequences

0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1
4	3	2	2	2	2	2	2	2	2
6	5	4	3	3	3	3	3	3	3
8	7	6	5	4	4	4	4	4	4
10	9	8	7	6	5	5	5	5	5
12	11	10	9	8	7	6	6	6	6
14	13	12	11	10	9	8	7	7	7
16	15	14	13	12	11	10	9	8	8
18	17	16	15	14	13	12	11	10	9

- The number on the diagonal of the pattern are whole number(blue).
- The number on the first column of the pattern are even number(red).

The number on the seconds column except zero are odd numbers(green).

2) Multiples

We can find multiples of any numbers on this pattern in two ways.

The first ways is for *even numbers*

The multiples of any even numbers are always even, so we have to do it on the first column (the column of even). For this thing, we should first take half the given number and then find the given number on the first column and count down the half of the given number. And then from the number to another half of the given number.

The second way is for *odd numbers*

The multiples of odd are may be odd or even. For this, we have to start from the seconds column (the column of odd). We should first find the number on the second column and count its place from the zero of the column. And the count the number of its place on the nest number.

Examples

For even number we take - four

The half of four is two. We find four on the first column and count down two(half of four) from four we found eight. Then again from eight we found twelve. We can find other multiples by performing this process.

For odd number we take – five

The places of five in the second row is four. We find five on the seconds column then count four on the next column, we found ten. Then again from ten we found fifteen.

0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1
4	3	2	2	2	2	2	2	2	2
6	5	4	3	3	3	3	3	3	3
8	7	6	5	4	4	4	4	4	4
10	9	8	7	6	5	5	5	5	5
12	11	10	9	8	7	6	6	6	6
14	13	12	11	10	9	8	7	7	7
16	15	14	13	12	11	10	9	8	8
18	17	16	15	14	13	12	11	10	9

3) **Square**

The square of any number can be find in this pattern by taking the number as the column or row the pattern. And count the number of numbers in the pattern.

By taking 3

We have, $3^2=9$

And in the pattern

0	0	0
2	1	1
4	3	2

The number of numbers in the pattern is nine.

So we can find the square with this pattern.

4) **Triangular number_[5] and tetrahedral number_[4]** For triangular number_[5], we should start from the first one, then to the down side we found 3. Then next row and count two, we found it as 6. Next we go to the next two row and count three down we found 10. This we can find triangular number_[5] from this pattern. We should count the number of the row and the column increased one from before. We should do on the same column for the first number.

For tetrahedral number_[4], we also start it from the 1 as the triangular number's_[4]. The we must count that number on the row and count down the to the column one more that the number. As doing so we can find tetrahedral number_[4].

0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1
4	3	2	2	2	2	2	2
6	5	4	3	3	3	3	3
8	7	6	5	4	4	4	4
12	9	8	7	6	5	5	5
12	11	10	9	8	7	6	6
14	13	12	11	10	9	8	7

IV. CONCLUSION

The Square pattern open many patterns. We can pull out many observation from these if we look on it. The more observation become with these and other types of patterns the more their observations will help them in other endeavours within mathematics.

V. REFERENCES.

- [1] "Binomial expression". Wikipedia.
- [2] "Combination". Wolfram MathWorld.
- [3] "Pascal's Triangles". Math is Fun.
- [4] "Tetrahedral Number Sequence". Math is Fun.
- [5] "Triangular Number Sequence". Math Is Fun.