Square number:

If any natural number m can be expressed as n^2, where n is also a natural number, then m is known as a square number.

The square numbers are also called as perfect squares.

***Example*:**

Let m = 36.

Now, 36 can be expressed as 6^2, where 6 is a natural number.

Therefore, 36 is a square number.

Number	Square	Number	Square
1	1 × 1 = 1	11	11 × 11 = 121
2	2 × 2 = 4	12	12 × 12 = 144
3	3 × 3 = 9	13	13 × 13 =169
4	4 × 4 = 16	14	14 ×1 4 = 196
5	5 × 5 = 25	15	15 × 15 = 225
6	6 × 6 = 36	16	16 × 16 = 256
7	7 × 7 = 49	17	17 × 17 = 289
8	8 × 8 = 64	18	18 × 18 = 324
9	9 × 9 = 81	19	19 ×1 9 = 361
10	10 × 10 = 100	20	20 × 20 = 400

Properties of Square Numbers:

1. The unit's place of square numbers can be 0, 1, 4, 5, 6 or 9.

No square number can end with 2, 3, 7 or 8.

2. If a number have 1 or 9 in its unit's place, then square of that number will end with 1.

***Example*:**

Number	Square
1	1
9	81
11	121

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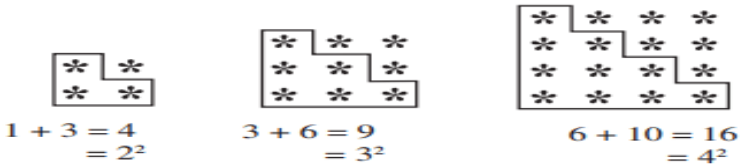
3. If a number have 4 or 6 in its unit's place, then square of that number will end with 6.
***Example*:**

Number	Square
4	16
16	36

4.There will always be even number of zeros at end of any square number.
***Example*:**

Number	Square
10	100
20	400

5. On combining two consecutive triangular numbers we get a square number.
***Example*:**



6. There are 2n non-perfect square numbers between the squares of the numbers n and (n+1).
***Example*:**
Between $3^2 = 9$ and $4^2 = 16$, there lies 6 numbers which are 10, 11, 12, 13, 14, and 15.
7. If the number is a square number, then it has to be the sum of successive odd numbers starting from 1.
***Example*:**
For $3^2 = 9$, the sum of successive odd numbers from 1 will be 1+3+5 = 9.
Note: If a natural number cannot be expressed as a sum of successive odd natural numbers starting with 1, then it is not a perfect square.
8. Square number can be summation of two consecutive natural numbers.
***Example*:**
$5^2 = 25 = 12 + 13$; $7^2 = 49 = 24 + 25$, etc.
9. Product of two consecutive even or odd natural numbers.
***Example*:**
$11 \times 13 = (12-1) \times (12+1) = 12^2 - 1$;
$13 \times 15 = (14-1) \times (14+1) = 14^2 - 1$
So, in general $(a+1) \times (a-1) = a^2 - 1$.

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