Maths formula on consecutive numbers

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ABSTRACT

This paper is about a formula which provides the relation among any three consecutive numbers. This formula also helps to find the square of any integer easily.

Keywords— *Consecutive integer, Square*

1. INTRODUCTION

There are a lot of formulas in mathematics. This is a formula that is not explained before. This formula shows the relation among any three consecutive numbers. By using this relation, we can find the square of any integer (easy for some numbers only, ex: 99,999,101, etc,). We can also find the product of some integers easily using this formula.

2. FINDINGS

There is a relation between the consecutive integers. If we take three consecutive integers, the square of the second integer is one greater than the product of first and third integer.

This can be written as "$b^2 = ac + 1$", where a, b and c are consecutive integers and $a < b < c$.

3. BENEFITS

This can be used to find the relation of any three consecutive integers.

We can use this formula to find the product and square of some integers easily. Let's see some examples,

Finding the square of 99,

$$99^2 = (98 * 100) + 1$$
$$= (9800) + 1$$
$$= 9801$$

Finding the product of 99 and 101,

$$100^2 = (99 * 101) + 1$$
$$100^2 - 1 = 99 * 101$$
$$10000 - 1 = 99 * 101$$
$$9999 = 99 * 101$$

4. RESULT

Let's take the 3 consecutive integers as x, (x+1), (x+2),

According to the formula ($b^2 = ac + 1$),

$$(x+1)^2 = x(x+2) + 1$$
$$x^2 + 2x + 1 = x^2 + 2x + 1$$

Hence proved.

So, we can confirm that, in three consecutive integers, the square of the second integer is one more than the product of first and third integer.

Therefore $b^2 = ac + 1$.