## Condition

The sum of the squares of two consecutive natural numbers is 421. Find the numbers.

## Solution

Consider the first sought number is *x*, then the next will be *(x+1)*. Construct equation to find these numbers:

$$x^2 + (x+1)^2 = 421$$
$$x^2 + (x^2 + 2x + 1) - 421 = 0$$
$$2x^2 + 2x - 420 = 0$$
$$a = 2, b = 2, c = -420$$
$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-2 \pm \sqrt{2^2 - 4 \cdot 2 \cdot (-420)}}{2 \cdot 2} = \frac{-2 \pm \sqrt{4 + 3360}}{4} = \frac{-2 \pm \sqrt{3364}}{4} = \frac{-2 \pm 58}{4}$$
$$x_1 = \frac{-1 + 29}{2} = \frac{28}{2} = 14;$$
$$x_2 = \frac{-1 - 29}{2} = \frac{-30}{2} = -15.$$

The only natural root of the equation is $x_1$ = 14. So, the other number is 14 + 1 = 15.

## Answer

14 and 15.