



Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is  $3025 - 385 = 2640$ .

Find the difference between the sum of the squares of the first one hundred natural numbers and the square of the sum.

A Pythagorean triplet is a set of three natural numbers,  $a < b < c$ , for which,

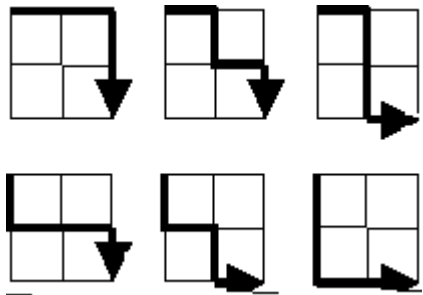
$$a^2 + b^2 = c^2$$

For example,  $3^2 + 4^2 = 9 + 16 = 25 = 5^2$ .

There exists exactly one Pythagorean triplet for which  $a + b + c = 1000$ .

Find the product  $abc$ .

Starting in the top left corner of a  $2 \times 2$  grid, and only being able to move to the right and down, there are exactly 6 routes to the bottom right corner.



How many such routes are there through a  $20 \times 20$  grid?



It is possible to make £2 in the following way:

How many dif