Euler's project problem 9

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Problem statement

A Pythagorean triplet is a set of three natural numbers, $a < b < c$, for which,
a2 + b2 = c2 For example, $32 + 42 = 9 + 16 = 25 = 52$.
There exists exactly one Pythagorean triplet for which a + b + c = 1000. Find the product abc.

Answer

The product abc = 31875000 and the numbers that got it are a= 200, b= 375 c= 425

Idea

Since $a < b < c$ loop through all possible combinations of those numbers where $a + b + c < 1000$. Then if $a^2 + b^2 = c^2$ you have your pythagorean triplet under those conditions.

Python code

```
def pythTriplet(sumLessThan):
    for a in range(1, sumLessThan + 1, 1):
        for b in range(a + 1, sumLessThan + 1, 1):
            c = sumLessThan - a - b
            if (a * a) + (b * b) == c * c:
                return a*b*c, str(a) + ", " + str(b) + ", " + str(c)

print(pythTriplet(1000))
```