

# Project Euler #45: Triangular, pentagonal, and hexagonal

This problem is a programming version of [Problem 45](#) from [projecteuler.net](#)

Triangle, pentagonal, and hexagonal numbers are generated by the following formulae:

Triangle	$T_n = n(n + 1)/2$	1, 3, 6, 10, 15, ...
Pentagonal	$P_n = n(3n - 1)/2$	1, 5, 12, 22, 35, ...
Hexagonal	$H_n = n(2n - 1)$	1, 6, 15, 28, 45, ...

It can be verified that  $T_{285} = P_{165} = H_{143} = 40755$

For this challenge you are given  $N, a, b$ , where  $a < b$  and  $a, b \in \{3, 5, 6\}$  where **3** represents triangular numbers, **5** represents pentagonal numbers and **6** is hexagonal. It can be observed that all hexagonal numbers are triangular numbers so we'll handle only 2 kinds of queries as  $N$  **3 5**, find all numbers below  $N$  which are Triangular number as well as Pentagonal  $N$  **5 6**, find all numbers below  $N$  which are Pentagonal number as well as Hexagonal

## Input Format

Input contains three integers  $N a b$

## Output Format

Print the answer corresponding to the test case. Print numbers in ascending order.

## Constraints

$$2 \leq N \leq 2 \times 10^{14}$$

$$a, b \in \{3, 5, 6\}$$

$$a < b$$

## Sample Input #00

```
10000 3 5
```

## Sample Output #00

```
1
210
```

## Sample Input #01

```
100000 5 6
```

## Sample Output #01

```
1
40755
```