

# Project Euler #29: Distinct powers

This problem is a programming version of [Problem 29](#) from [projecteuler.net](#)

Consider all integer combinations of  $a^b$  for  $2 \leq a \leq 5$  and  $2 \leq b \leq 5$ :

$$\begin{aligned} 2^2 &= 4, 2^3 = 8, 2^4 = 16, 2^5 = 32 \\ 3^2 &= 9, 3^3 = 27, 3^4 = 81, 3^5 = 243 \\ 4^2 &= 16, 4^3 = 64, 4^4 = 256, 4^5 = 1024 \\ 5^2 &= 25, 5^3 = 125, 5^4 = 625, 5^5 = 3125 \end{aligned}$$

If they are then placed in numerical order, with any repeats removed, we get the following sequence of 15 distinct terms:

$$4, 8, 9, 16, 25, 27, 32, 64, 81, 125, 243, 256, 625, 1024, 3125$$

How many distinct terms are in the sequence generated by  $a^b$  for  $2 \leq a \leq N$  and  $2 \leq b \leq N$ ?

## Input Format

Input contains an integer  $N$

## Constraints

$$2 \leq N \leq 10^5$$

## Output Format

Print the answer corresponding to the test case.

## Sample Input

5

## Sample Output

15