

# Project Euler #132: Large repunit factors



This problem is a programming version of [Problem 132](#) from [projecteuler.net](#)

A number consisting entirely of ones is called a repunit. We shall define  $R(k)$  to be a repunit of length  $k$ .

For example,  $R(10) = 1111111111 = 11 \times 41 \times 271 \times 9091$ , and the sum of these prime factors is 9414.

Given  $a$ ,  $b$  and  $k$ , find the sum of the first  $k$  distinct prime factors of  $R(a^b)$ .

## Input Format

The first line of input contains  $T$ , the number of test cases.

Each test case consists of one line containing three space-separated integers,  $a$ ,  $b$  and  $k$ .

## Constraints

$$T \geq 1$$

$$10 \leq a \leq 10^8$$

$$9 \leq b \leq 10^8$$

$$1 \leq k \leq 45$$

$a$  is a multiple of 10

In test cases worth 1/3 of the total points:

$$T \leq 600$$

$$a^b \leq 10^{15}$$

In test cases worth 2/3 of the total points:

$$T \leq 600$$

In test cases worth 3/3 of the total points:

$$T \leq 25000$$

## Output Format

For each test case, output a single line containing a single integer, the answer for that test case.

## Sample Input

```
1
10 9 2
```

## Sample Output

```
28
```