Project Euler #132: Large repunit factors

This problem is a programming version of from

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

$T \ge 1$
$10 \le a \le 10^8$
$9 \le b \le 10^8$
$1 \le k \le 45$
a is a multiple of 10

In test cases worth 1/3 of the total points:
$T \le 600$
$a^b \le 10^{15}$

In test cases worth 2/3 of the total points:
$T \le 600$

In test cases worth 3/3 of the total points:
$T \le 25000$

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
```