Problem V. Recursive Queries

Time limit 2000 ms
Mem limit 262144 kB

Let us define two functions f and g on positive integer numbers.

$$f(n) = \text{product of non-zero digits of } n$$

$$g(n) = \begin{cases} n & \text{if } n < 10 \\ g(f(n)) & \text{otherwise} \end{cases}$$

You need to process Q queries. In each query, you will be given three integers l, r and k. You need to print the number of integers x between l and r inclusive, such that $g(x) = k$.

Input

The first line of the input contains an integer Q ($1 \le Q \le 2 \times 10^5$) representing the number of queries.

Q lines follow, each of which contains 3 integers l, r and k ($1 \le l \le r \le 10^6$, $1 \le k \le 9$).

Output

For each query, print a single line containing the answer for that query.

Examples

Input	Output
4 22 73 9 45 64 6 47 55 7 2 62 4	1 4 0 8

Input	Output
4 82 94 6 56 67 4 28 59 9 39 74 4	3 1 1 5

Note

In the first example:

- $g(33) = 9$ as $g(33) = g(3 \times 3) = g(9) = 9$
- $g(47) = g(48) = g(60) = g(61) = 6$
- There are no such integers between 47 and 55.
- $g(4) = g(14) = g(22) = g(27) = g(39) = g(40) = g(41) = g(58) = 4$