Problem C. Counting Divisors

Input file:	*standard input*
Output file:	*standard output*
Time limit:	7 seconds
Memory limit:	512 mebibytes

In mathematics, the function $d(n)$ denotes the number of divisors of a positive integer n.

For example, $d(12) = 6$ because 1, 2, 3, 4, 6 and 12 are all divisors of 12.

In this problem, you are given l, r and k. Your task is to calculate the following:

$$\left(\sum_{i=l}^{r} d\left(i^k\right)\right) \bmod 998\,244\,353.$$

Input

The first line of the input contains an integer T ($1 \le T \le 15$) denoting the number of test cases.

Each test case is given as a line containing three integers l, r and k ($1 \le l \le r \le 10^{12}$, $r - l \le 10^6$, $1 \le k \le 10^7$).

Output

For each test case, print a single line containing an single integer: the answer to the test case.

Example

standard input	standard output
3 1 5 1 1 10 2 1 100 3	10 48 2302