Hashing

Consider the hash function $h(y) = a*y + b \pmod m$ which maps each integer to some integer between 0 and m-1. You are given x,n,c,d and are curious how many of the hash values $h(x),h(x+1),...,h(x+n)$ land in the interval [c,d].

Input

The first line contains a positive integer t, the number of test cases ($1 \le t \le 10^5$). t lines then follow, where the ith line gives the values a,b,x,n,c,d,m, space-separated, for the ith test case. All given values are non-negative. Also, $1 \le m \le 10^{15}$, $c \le d < m$, $a,b < m$, $x+n \le 10^{15}$, and $a*(x+n) + b \le 10^{15}$.

Output

For each test case in order output the number of i, $0 \le i \le n$, such that $c \le a*(x+i) + b \pmod m \le d$ in that test case, followed by a newline.

Example

Input:
```
2
2 3 1 3 0 1 7
1 0 0 8 0 8 9
```

Output:
```
1
9
```