The Simplest Sum

Consider the following pseudocode:

```
/*
 * function has two integer parameters- k and n
 * function returns the value of sum
 */
function f(k, n) {
    sum = 0;

    for (i = 1; i ≤ n; i++) {
        sum += i;
        i *= k;
    }

    return sum;
}
```

For three given integers k, l and r, find the value of S:

$$S = \left(\sum_{n=l}^{r} f(k,\ n) \right) \% \left(10^9 + 7\right)$$

Input Format

The first line of the input is an integer Q, total number of queries. Each of the next Q lines contains three space separated integers k, l and r.

Constraints

- $1 \le Q \le 10^5$
- $2 \le k \le 10^5$
- $1 \le l \le r \le 10^{18}$

Output Format

For each query, print the value of S on a new line.

Sample Input

```
4
2 1 5
3 1 5
4 1 5
5 1 5
```

Sample Output

```
14
13
10
5
```

Explanation

- *Query 2 1 5*

$$f(2, 1) = 1$$
$$f(2, 2) = 1$$
$$f(2, 3) = 4$$
$$f(2, 4) = 4$$
$$f(2, 5) = 4$$

So, $S = f(2, 1) + f(2, 2) + f(2, 3) + f(2, 4) + f(2, 5) = 1 + 1 + 4 + 4 + 4 = 14$

- *Query 3 1 5*

$$f(3, 1) = 1$$
$$f(3, 2) = 1$$
$$f(3, 3) = 1$$
$$f(3, 4) = 5$$
$$f(3, 5) = 5$$

So, $S = f(3, 1) + f(3, 2) + f(3, 3) + f(3, 4) + f(3, 5) = 1 + 1 + 1 + 5 + 5 = 13$

- *Query 4 1 5*

$$f(4, 1) = 1$$
$$f(4, 2) = 1$$
$$f(4, 3) = 1$$
$$f(4, 4) = 1$$
$$f(4, 5) = 6$$

So, $S = f(4, 1) + f(4, 2) + f(4, 3) + f(4, 4) + f(4, 5) = 1 + 1 + 1 + 1 + 6 = 10$

- *Query 5 1 5*

$$f(5, 1) = 1$$
$$f(5, 2) = 1$$
$$f(5, 3) = 1$$
$$f(5, 4) = 1$$
$$f(5, 5) = 1$$

So, $S = f(5, 1) + f(5, 2) + f(5, 3) + f(5, 4) + f(5, 5) = 1 + 1 + 1 + 1 + 1 = 5$