

# Summing the K-N-R Series

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You are given a sequence whose  $n^{\text{th}}$  term is

$$T_n = n^K \times R^n$$

You have to evaluate the series

$$S_n = T_1 + T_2 + T_3 + \cdots + T_n$$

Find  $S_n \bmod (10^9 + 7)$ .

## Input Format

The first line of input contains  $T$ , the number of test cases.  
Each test case consists of three lines, each containing  $K$ ,  $n$  and  $R$  respectively.

## Output Format

For each test case, print the required answer in a line.

## Constraints

$$\begin{aligned} 1 &\leq T \leq 10 \\ 1 &\leq K \leq 10^3 \\ 1 &\leq n \leq 10^{16} \\ 2 &\leq R \leq 10^{16} \\ R \bmod (10^9 + 7) &\neq 1 \end{aligned}$$

## Sample Input

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

## Sample Output

```
1146
5988
```

## Explanation

Case 1:  $1146 = 1^2 \times 2^1 + 2^2 \times 2^2 + 3^2 \times 2^3 + 4^2 \times 2^4 + 5^2 \times 2^5$   
Case 2:  $5988 = 1^3 \times 3^1 + 2^3 \times 3^2 + 3^3 \times 3^3 + 4^3 \times 3^4$