

# Kth Power Summation

Leeana Learned Few New Things Few Days Ago , Like:

- 1) **Find The Summation Of Divisors.**
- 2) **Modular Arithmetic**

So Now Her Uncle Gave Her A Task.

Task Is: You Will Be Given A Number(N) And Another Number(K). **Now You Have To Find K<sub>th</sub> Power Summation Of Divisors Of N.**

$$\sum_{i=1}^N \text{if}(N \% i == 0) i^K$$

Summation Of All Divisors Of **N** Will Be Huge, So You Have To Print The Summation Module (M=1000000007).

**Like: Divisors Of 6 is: ( 1 2 3 6 ) And K = 2.**

**so, summation is:  $1^K + 2^K + 3^K + 6^K = 1^2 + 2^2 + 3^2 + 6^2 = 1 + 4 + 9 + 36 = 50 \% 1000000007 = 50$**

**Leeana Thinks That You Are A Great Programmer, So She Needs Your Help. Can You Help Her??? :D :D :D**

## Input

Input Starts With An Integer T ( $\leq 500$ ), Denoting The Number Of Test Cases. Each Case Contains An Integer N ( $1 \leq N \leq 10^{15}$ ) And An Integer K ( $1 \leq K \leq 10^5$ ) Denoting The Power Of Divisors.

## Output

For Each Test Cases, Print The Case Number And The Kth Power Summation Of Divisors Of N Module 1000000007. After Each Case Print A New Line. See Sample Input And Output For Better Explanation. 😊

## Example

**Input:**

```
4
6 2
6 1
6 4
6 3
```

**Output:**

Case 1: 50  
Case 2: 12  
Case 3: 1394  
Case 4: 252

#Extra\_Challenge:  $N \leq 10^{18}$ ,  $T \leq 1000$  TL: 1s