

# GCD Sequence

How many non decreasing sequences are there of length  $K$ , with the condition that numbers in sequence can take values only from  $1, 2, 3, \dots N$  and gcd of all numbers in the sequence must be  $1$ .

## Input Format

The first line contains an integer  $T$  i.e. the number of test cases.  
 $T$  lines follow, each line containing two integers  $N$  and  $K$  separated by a single space.

## Output Format

For each testcase, print in a newline the answer  $\text{mod } (10^9 + 7)$ .

## Constraints

$$1 \leq T \leq 5$$
$$1 \leq N \leq 10^5$$
$$1 \leq K \leq 10^5$$

## Sample Input

```
4
2 4
3 4
5 2
1 10
```

## Sample Output

```
4
13
10
1
```

## Explanation

For the first testcase, the sequences are

```
(1,1,1,1), (1,1,1,2), (1,1,2,2), (1,2,2,2) = 4
```

For the second testcase, the sequences are

```
(1,1,1,1), (1,1,1,2), (1,1,1,3), (1,1,2,2), (1,1,2,3), (1,1,3,3)
(1,3,3,3), (1,2,2,2), (1,2,2,3), (1,2,3,3), (2,2,2,3), (2,2,3,3), (2,3,3,3)
```

which are 13 in number.

For the third testcase, the sequences are

```
(1,1), (1,2), (1,3), (1,4), (1,5), (2,3), (2,5), (3, 4), (3, 5), (4, 5) = 10
```

for the fourth testcase, the only sequence is

```
(1,1,1,1,1,1,1,1,1,1)
```

