

# Alien Languages

Sophia has discovered several alien languages. Suprisingly, all of these languages have an [alphabet](#), and each of them may contain thousands of characters! Also, all the words in a language have the same number of characters in it.

However, the aliens like their words to be aesthetically pleasing, which for them means that for the  $i^{th}$  letter of an  $n$  letter alphabet (letters are indexed at 1):

if  $2 * i > n$

the  $i^{th}$  letter may be the last letter of a word, and it may be immediately followed by any letter including itself.

if  $2 * i \leq n$

the  $i^{th}$  letter can not be the last letter of a word and also can only be immediately followed by  $j^{th}$  letter iff  $j \geq 2 * i$ .

Sophia wants to know how many different words exist in this language. Since the result may be large, she wants to know this number, modulo 100000007.

## Input

The first line contains  $t$ , the number of test cases. The first line is followed by  $t$  lines, each line denoting a test case. Each test case will have two space separated integers  $n, m$  which denote the number of letters in the language and the length of words in this language respectively.

## Output

For each testcase output the number of possible words modulo 100000007.

## Constraints

$$1 \leq t \leq 5$$

$$1 \leq n \leq 10^5$$

$$1 \leq m \leq 5 * 10^5$$

## Sample Input

```
3
1 3
2 3
3 2
```

## Sample Output

```
1
3
6
```

## Explanation

For the first test-case, there's one letter and all the words consist of 3 letters. There's only one possibility which is "aaa"

For the second test-case, there are two letters (a & b) and all the words are of 3 letters. The possible ones

are "abb", "bab", & "bbb". The words can end only with 'b' because  $2 * \text{index}(b) = 2 * 2 > 2$  and for 'a', it's  $2 * \text{index}(a) = 2 * 1 \leq 2$ . "aab" is not allowed because 'a' can not be followed immediately by 'a'. For a word of length 4 and alphabet of size 2, "abab" would be allowed.

For the third test-case, there are three letters (a, b & c) and all of the words are 2 letters. The words can end only with 'b' or 'c'. The possible words are "ab", "ac", "bb", "cc", "bc", "cb"