Problem A. Counting Polygons

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

Mr. Panda loves counting polygons. Today, he wants to count the number of non-isomorphic convex polygons with m sides such that the length of each side is a positive integer, the perimeter is exactly n and no two sides are collinear.

Mr. Panda thinks such a polygon could be described by the sequence $[l_1, l_2, \ldots, l_m]$ — lengths of its sides in some order. A polygon may have several describing sequences. Each describing sequence may start at any side of the polygon and go through all the sides in clockwise or counterclockwise such that each side appears exactly once.

Mr. Panda calls two convex polygons P and Q isomorphic if and only if there exists a describing sequence $A = [a_1, a_2, \ldots, a_x]$ of P and a describing sequence $B = [b_1, b_2, \ldots, b_y]$ of Q such that $x = y$ and $a_i = b_i$ for $i = 1, 2, \ldots, x$.

Could you please help Mr. Panda count the number of these polygons? To avoid huge output data, you are only asked the answer modulo $(10^9 + 7)$.

Input

There are multiple test cases. The first line of the input contains an integer T $(1 \le T \le 10^4)$, indicating the number of test cases. For each test case:

The first line contains two integers n and m $(3 \le m \le n \le 10^7)$.

Output

For each test case, output the number of different polygons modulo $(10^9 + 7)$ in a single line.

Example

standard input	standard output
4 3 3 4 3 5 3 7 4	1 0 1 3

Note

For the third sample case, there is only one type of convex polygon, whose describing sequence can be $[1, 2, 2]$, or $[2, 1, 2]$, or $[2, 2, 1]$.

For the last sample case, there are three types of convex polygons, whose describing sequences can be $[1, 2, 2, 2]$, $[1, 1, 2, 3]$ and $[1, 2, 1, 3]$ respectively.

Note that a polygon with describing sequence $[1, 2, 1, 3]$ and a polygon with describing sequence $[1, 3, 1, 2]$ are isomorphic.