

Problem G. Master Zhu and Polygons

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

Consider a regular polygon with N vertices, where N is odd. The vertices are numbered from 1 to N in circular order. We can select M of these vertices to form a convex polygon on them. Master Zhu wants you to find how many of such possible convex polygons have exactly K acute angles. As their number can be very large, find the answer modulo $10^9 + 7$. Two polygons are considered different if the sets of numbers in their vertices differ.

Input

The first line of input contains one integer T , the number of test cases ($1 \leq T \leq 5 \cdot 10^4$).

Each test case is described by a single line containing three integers N , M , and K ($3 \leq N \leq 10^6$, $3 \leq M \leq N$, $0 \leq K \leq M$, and N is odd).

Output

For each test case, print the answer modulo $10^9 + 7$ on a separate line.

Example

standard input	standard output
1 5 4 2	5