

A. Most Unstable Array

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

You are given two integers n and m . You have to construct the array a of length n consisting of **non-negative integers** (i.e. integers greater than or equal to zero) such that the sum of elements of this array is **exactly** m and the value $\sum_{i=1}^{n-1} |a_i - a_{i+1}|$ is the maximum possible. Recall that $|x|$ is the absolute value of x .

In other words, you have to maximize the sum of absolute differences between adjacent (consecutive) elements. For example, if the array $a = [1, 3, 2, 5, 5, 0]$ then the value above for this array is $|1 - 3| + |3 - 2| + |2 - 5| + |5 - 5| + |5 - 0| = 2 + 1 + 3 + 0 + 5 = 11$. Note that this example **doesn't show the optimal answer** but it shows how the required value for some array is calculated.

You have to answer t independent test cases.

Input

The first line of the input contains one integer t ($1 \leq t \leq 10^4$) — the number of test cases. Then t test cases follow.

The only line of the test case contains two integers n and m ($1 \leq n, m \leq 10^9$) — the length of the array and its sum correspondingly.

Output

For each test case, print the answer — the maximum possible value of $\sum_{i=1}^{n-1} |a_i - a_{i+1}|$ for the array a consisting of n non-negative integers with the sum m .

Example

input
5 1 100 2 2 5 5 2 1000000000 1000000000 1000000000
output
0 2 10 1000000000 2000000000

Note

In the first test case of the example, the only possible array is $[100]$ and the answer is obviously 0.

In the second test case of the example, one of the possible arrays is $[2, 0]$ and the answer is $|2 - 0| = 2$.

In the third test case of the example, one of the possible arrays is $[0, 2, 0, 3, 0]$ and the answer is $|0 - 2| + |2 - 0| + |0 - 3| + |3 - 0| = 10$.