Problem A. Mariam and Kumar

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	64 megabytes

Mariam is a talented student in robots programming. She programmed a robot (Kumar) that moves forward and backward on straight and curved paths. She is so attached to Kumar and sometimes, when she is bored, she likes to imitate her robot by moving forward and backward but in a specific manner.

The floor of Mariam's bedroom is tiled with white and yellow tiles. She stands on one of the tiles and starts to walk along the row she is standing on. She first specifies the direction of walking, and decides on a number n and starts to walk n steps.

If she reaches the wall, she turns back and continues to walk in the opposite direction. She continues until she takes n steps. Note that turning back besides a wall does not count as a step. She counts how many yellow tiles she steps on.

For example, the below scenario shows a row in the floor. The colors of the tiles are shown with the characters 'Y' and 'W' for yellow and white tiles respectively. If she starts at tile 3 facing to the right, and decides to take 7 steps, she finally stops at tile 2. During this walk, she steps 3 times on yellow tiles.

1 2 3 4 5 6
Y W W Y W Y

Input

The input file contains T test cases. The first line of input has only the integer T. Each test case contains two lines. The first line contains two integers m ($3 \leq m \leq 100$), which is the number of tiles in the row Mariam is standing on, and n ($1 \leq n \leq 1000$), which is the number of steps Mariam takes. The second line contains m integers describing the tiles in the row and is in the following format: $a_1\ a_2\ ...\ a_m$.

Each a_i is either 0, 1, 2, or 3. If $a_i = 0$, then a_i has a yellow tile, and $a_i > 0$ indicates that a_i has a white tile. If $a_i = 2$, then Mariam is starting from the tile a_i, facing to the right, and if $a_i = 3$ then she is starting from the tile a_i, facing to the left. The numbers are separated by space characters. You may assume that exactly one of the numbers is 2 or 3. Note that it is implied that Mariam always starts from a white tile.

Output

For each test case, write a single line in the output having a single number which is the number of times Mariam steps on a yellow tile.

Example

standard input	standard output
1 6 7 0 1 2 0 1 0	3