Camels

Bob likes to draw camels: with a single hump, two humps, three humps, etc. He draws a camel by connecting points on a coordinate plane. Now he's drawing camels with t humps,representing them as polylines in the plane. Each polyline consists of n vertices withcoordinates (x_1, y_1), (x_2, y_2), ..., (x_n, y_n). The first vertex has a coordinate $x_1 = 1$, the second— $x_2 = 2$, etc. Coordinates y_i might be any, but should satisfy the following conditions:

- there should be t humps precisely, i.e. such indexes j ($2 \le j \le n - 1$), so that $y_{j-1} < y_j > y_{j+1}$,
- there should be precisely $t - 1$ such indexes j ($2 \le j \le n - 1$), so that $y_{j-1} > y_j < y_{j+1}$,
- no segment of a polyline should be parallel to the Ox-axis,
- all y_i are integers between 1 and 4.

For a series of his drawings of camels with t humps Bob wants to buy a notebook, but he doesn'tknow how many pages he will need. Output the amount of different polylines that can be drawn to represent camels with t humps for a given number n.

Input

The first line of input contains the number of testcases , Ntest.

Each testcase contains a pair of integers n and t ($3 \le n \le 20$, $1 \le t \le 10$).

Output

For each testcase ,output the required amount of camels with t humps.

Example

Input:
1
6 1
Output:
6

Note
In the first sample test sequences of y-coordinates for six camels are: 123421, 123431, 123432, 124321, 134321 и 234321 (each digit corresponds to one value of y_i).