Given a rectangular grid, with dimensions $m \times n$, compute the number of ways of completely tiling it with dominoes. Note that if the rotation of one tiling matches another, they still count as different ones. A domino is a shape formed by the union of two unit squares meeting edge-to-edge. Equivalently, it is a matching in the grid graph formed by placing a vertex at the center of each square of the region and connecting two vertices when they correspond to adjacent squares. An example of a tiling is shown below.
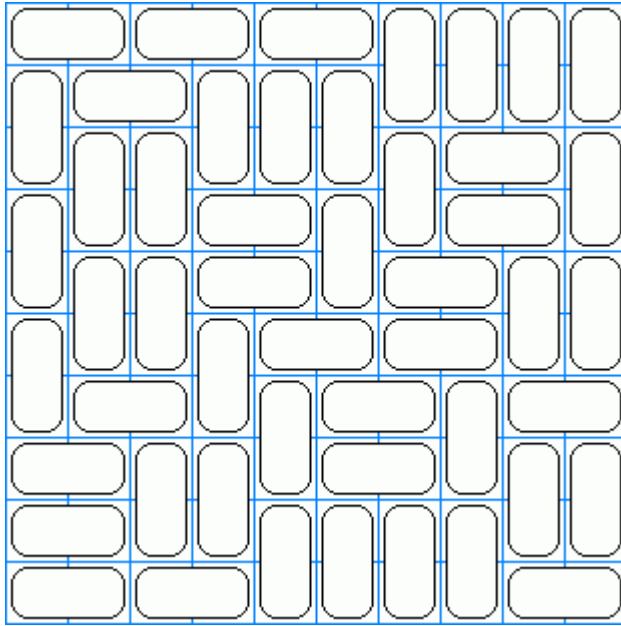
Input

The input will consist of a set of lines with m n, given the restriction $n * m < 101$.

Output

For each line of input, output the number of tilings in a separate line.

Sample Input

```
2 10
4 10
8 8
```

Sample Output

```
89
18061
12988816
```