

## F - More Knight Hops

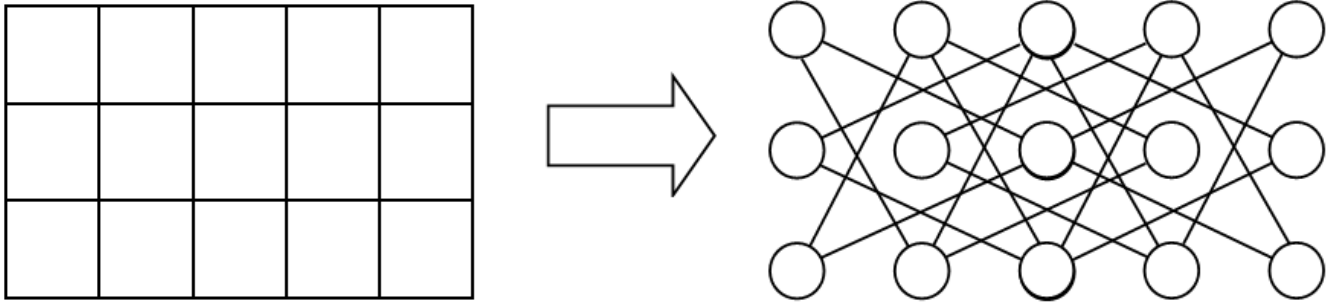
*Where there is Matter there is Geometry*  
Johannes Kepler

### Background

We love chess! So, let's do another problem about knights on a chessboard. But, in this case, we are interested in the total number of movements. Have you ever wondered how many knight movements can be done on a chessboard?

### The Problem

We have a rectangular chessboard of size  $n \times m$ . We represent the movements of a chess knight as edges in a graph. For example, here we have a board of size  $3 \times 5$ .



Here we have 15 nodes and 20 edges. But, in general, how many edges are there for a chessboard of size  $n \times m$ ?

### The Input

The first line of the input contains an integer,  $t$ , indicating the number of test cases.

For each test case, there is a line with two numbers,  $n$  and  $m$ , separated by a space indicating the board size, where  $3 \leq n, m \leq 15000$ .

### The Output

For each test case, the output should consist of one line indicating the total number of edges of the graph corresponding to the given board size.

### Sample Input

```
3
3 3
5 3
4 6
```

### Sample Output

```
8
20
44
```