Problem I. Tractor

Source file name:	tractor.c, tractor.cpp, tractor.java
Input:	`standard`
Output:	`standard`

Bessie the Cow has stolen Farmer John's tractor and is running wild on the coordinate plane! She, however, is a terrible driver, and can only move according to the following rules:

1. Each of her movements is in the same direction as either the positive x-axis or the positive y-axis.
2. Her nth movement takes her 2^{n-1} units forward in her chosen direction. (On her first movement, $n = 1$, so she moves 1 unit.)

Farmer John's farm is on the coordinate plane, in the shape of a rectangle with corners at $(0, 0)$, $(A, 0)$, $(0, B)$ and (A, B). If Bessie starts at $(0, 0)$, how many points inside the farm, including the boundary, could she reach?

Input

The input begins with an integer N ($1 \leq N \leq 100$) on a line by itself, indicating the number of test cases that follow. Each of the following N lines contains two space separated integers A and B ($1 \leq A, B \leq 10^8$), describing the upper-right corner of Farmer John's farm.

Output

Output N lines, with the N-th line containing the number of points that Bessie could possibly reach in the N-th test case.
In the first test case of the sample, Bessie can reach the following six points: $(0, 0)$, $(0, 1)$, $(1, 0)$, $(1, 2)$,$(2, 1)$ and $(3, 0)$.

Example

Input	Output
2 2 3 7 7	6 15