Number of Integer Solutions

Write a C++ program to find the number of integer solutions to the following equation (given integers N, a_1, b_1, a_2, b_2, a_3, b_3, a_4 and b_4) :

$$x_1 + x_2 + x_3 + x_4 = N$$

satisfying

$$a_1 \leq x_1 \leq b_1$$

$$a_2 \leq x_2 \leq b_2$$

$$a_3 \leq x_3 \leq b_3$$

$$a_4 \leq x_4 \leq b_4$$

Input

The first line contains one integer t, the number of test cases.
Each of the following t lines (for each testcase) contains 9 integers
N, a_1, b_1, a_2, b_2, a_3, b_3, a_4, b_4 where $-100 \leq N \leq 100$, $-25 \leq a_i \leq b_i \leq 25$.

Output

For each testcase, show the number of integer solutions to the equation.

Examples

input	output
8 4 0 1 0 2 0 3 0 4 4 1 4 1 4 1 4 1 4 4 4 4 4 4 4 4 4 4 100 0 25 0 25 0 25 0 25 100 -25 25 -25 25 -25 25 -25 25 50 0 25 0 25 0 25 0 25 -50 -25 25 -25 25 -25 25 -25 25 0 -25 25 -25 25 -25 25 -25 25	20 1 0 1 1 11726 23426 88451