

Problem E. Even-dominant Numbers

Input file: *standard input*
Output file: *standard output*
Time limit: 3 seconds
Memory limit: 512 mebibytes

This is an interactive problem.

Let x be an even-dominant number if the total number of even decimal digits of x and $\lfloor \sqrt{x} \rfloor$ (the decimal representation of the square root of x , rounded down to the nearest integer) is greater than the total number of odd decimal digits of these numbers.

For example, 222213 is an even-dominant number because the total number of even digits in 222213 and $\lfloor \sqrt{222213} \rfloor = 471$ is 5, which is greater than 4, the total number of odd digits. However, the number 2 is not an even-dominant number because the total number of even digits in 2 and $\lfloor \sqrt{2} \rfloor = 1$ is equal to the total number of odd digits.

Determine the number of even-dominant numbers in the segment $[\ell, r]$.

Interaction Protocol

The jury's program outputs a sequence of queries, one after the other. Once the participant's program has printed an answer for a given query, the jury's program will proceed to output the next query.

Input

The first line contains one integer t ($1 \leq t \leq 10\,000$): the number of queries.

Each of the next t lines contains two integers ℓ_i and r_i ($1 \leq \ell_i \leq r_i \leq 10^{12}$) denoting the segment for the i -th query.

Output

For each query, print a line with a single integer: the number of even-dominant numbers in the given segment.

Example

standard input	standard output
1	3
1 10	