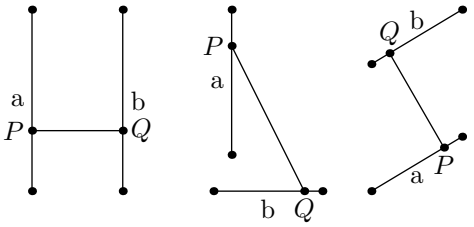
H-Shaped Figures

Time limit: 2 seconds
Memory limit: 1024 megabytes

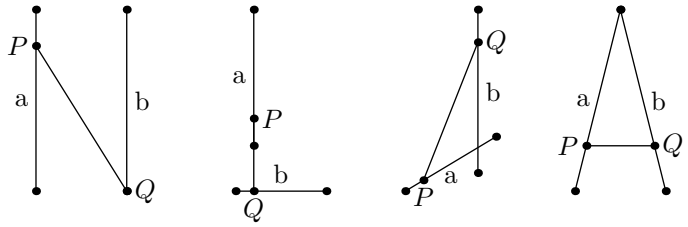
After a huge success of the last year's "K-Shaped Figures" problem, we've come up with an innovative "H-Shaped Figures" problem for this year. And we have some plans for the next 24 years.

Let's say that three segments PQ, a, and b on a plane form an *H-shaped figure* if:

- point P lies strictly inside segment a, and segments PQ and a are not collinear;
- point Q lies strictly inside segment b, and segments PQ and b are not collinear;
- segments a and b do not have common points.



Valid H-shaped figures



Invalid H-shaped figures

You are given the coordinates of points P and Q, along with n candidate segments for a and b. Note that some of the given segments may coincide, but they should still be treated as different segments.

Find the number of possible ways to choose one of the given n segments as a and another one as b to form an H-shaped figure along with the given segment PQ.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 10^5$). The description of the test cases follows.

The first line of each test case contains four integers x_P, y_P, x_Q, y_Q, denoting the coordinates of points P and Q ($-10^9 \le x_P, y_P, x_Q, y_Q \le 10^9$). Points P and Q do not coincide.

The second line contains a single integer n, denoting the number of candidate segments ($2 \le n \le 2 \cdot 10^5$).

The i-th of the following n lines contains four integers $x_{i,1}, y_{i,1}, x_{i,2}, y_{i,2}$, denoting the coordinates of the endpoints of the i-th segment ($-10^9 \le x_{i,1}, y_{i,1}, x_{i,2}, y_{i,2} \le 10^9$). All segments have positive lengths.

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print the number of ways to form an H-shaped figure using the given segment PQ and two of the candidate segments.

Example

standard input	standard output
1 0 0 4 0 8 0 0 2 1 -1 -1 2 2 3 3 5 -3 0 2 6 -1 2 -2 5 1 -1 1 3 -3 -1 0 2 0 -1 -1 2 2	6