Triangular

We have three integers representing the lengths of the sides of a triangle. We want to „label" these triangles according to the following properties:

If the given triplet does not form a triangle, output „`not a triangle`".

If the triangle is congruent to one seen before, output „`congruent to #X`", where #X is the index of the first triangle it is congruent to (starting from 1).

If the triangle is similar, output „`similar to #X`", where #X serves the same purpose as in the previous case.

Otherwise, the label consists of one or two parts. The first part indicates whether the triangle is acute („`acute`"), right („`right`"), or obtuse („`obtuse`"). The second part occurs if: all sides are equal („`equilateral`") or if only two sides are equal („`isosceles`").

Note: Two triangles are congruent if one can be transformed into the other by a combination of rotation, reflection, or translation. Two triangles are similar if one can be enlarged to form a triangle congruent to the other. Three points on a line do not form a triangle.

Input

The first line contains the number N ($N \leq 100\,000$) - the number of triangles. The following N lines contain three space-separated lengths between 1 and 10^9.

Output

For each triangle, output its label. (Print exactly one space between each word, but none after the last word).

Example

input	output
6 3 4 5 47 47 42 40 30 50 42 47 47 3 4 9 100 101 190	right acute isosceles similar to #1 congruent to #2 not a triangle obtuse