

Euler Line

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 1024 mebibytes

Given a line on the plane, construct a triangle with vertices at integer points such that its Euler line coincides with the given line.

Recall the basic definitions. Let $\triangle ABC$ be a non-degenerate triangle on the plane, M_A , M_B , and M_C be the midpoints of sides BC , AC , and AB , respectively, and s_A , s_B , and s_C be the *perpendicular bisectors* to sides BC , AC , and AB . Formally, s_A is the perpendicular to line BC , drawn at point M_A ; lines s_B and s_C are defined similarly. From school geometry, it is known that lines s_A , s_B , and s_C intersect at a single point O . The point O has a remarkable property, namely, it is equidistant from all three vertices A , B , and C . The circle centered at O with radius OA is called the *circumcircle* of triangle ABC , and it is the unique circle in the plane that passes through all three vertices of the triangle. The point O is referred to as the *circumcenter* of triangle ABC .

Let H_A , H_B , and H_C denote the orthogonal projections of vertices A , B , and C onto lines BC , AC , and AB , respectively. The segments AH_A , BH_B , and CH_C are called the *heights* of triangle ABC . From school geometry, it is known that lines AH_A , BH_B , and CH_C intersect at a single point H , called the *orthocenter* of triangle ABC . In an acute or right triangle, H lies on the heights themselves, while in an obtuse triangle, it lies on their extensions.

The segments AM_A , BM_B , and CM_C are called the *medians* of the triangle. From school geometry, it is known that the medians intersect at a single point G , called the *centroid* or *barycenter* of triangle ABC .

The triangle $M_A M_B M_C$ is called the *medial* triangle for triangle ABC . The concepts above also apply to it: thus, point G is the barycenter of the medial triangle, and O is the orthocenter of the medial triangle. The circumcircle of triangle $M_A M_B M_C$ passes through M_A , M_B , M_C , H_A , H_B , H_C , as well as through the midpoints of segments AH , BH , CH , which is why it is called the *nine-point circle* of triangle ABC , and its center is denoted as O_9 .

In an equilateral triangle, points O , H , G , and O_9 coincide. In any other triangle, they are pairwise distinct, but they lie on a single line, called the *Euler line* of triangle ABC . The arrangement of these four points on the Euler line is also known: O_9 is always the midpoint of segment OH , and point G lies on segment OH and divides it in the ratio $2 : 1$ (with G being twice as close to O as to H).

You are required to construct a non-degenerate triangle ABC with vertices at integer points, such that O , H , M , and O_9 lie on the given line, or report that this is impossible.

Input

The first line contains an integer t , the number of test cases ($1 \leq t \leq 5 \cdot 10^5$).

In the only line of the test case description, there are three integers, k , ℓ , and m , denoting the coefficients of the line ($-10^3 \leq k, \ell, m \leq 10^3$). The line will be defined as the set of points (x, y) that satisfy the equation $kx + \ell y + m = 0$. It is guaranteed that $k^2 + \ell^2 > 0$.

Output

For each test case, output six integers $A_x, A_y, B_x, B_y, C_x, C_y$, denoting the coordinates of the vertices of a non-degenerate triangle. The conditions $-10^6 \leq A_x, A_y, B_x, B_y, C_x, C_y \leq 10^6$ must be satisfied. The Euler line of triangle ABC must have the equation $kx + \ell y + m = 0$. If such a triangle does not exist, output six zeros separated by spaces.

In each of the tests provided by the jury, it is guaranteed that, if there exists at least one triangle ABC with integral vertices with the given Euler line, there is also a triangle with conditions $-10^6 \leq A_x, A_y, B_x, B_y, C_x, C_y \leq 10^6$ satisfied.

Example

<i>standard input</i>	<i>standard output</i>
8	-1 -1 -1 1 0 0
0 1 0	-2 -2 -2 2 1 -1
1 0 1	-2 -1 -2 2 0 1
-1 1 -2	-4 -3 2 -4 2 1
3 4 8	-1 -1 -1 0 0 0
1 1 1	0 0 0 0 0 0
8 4 2	-4 0 3 -2 0 4
27 9 3	5811 -1154 -3261 -2058 -3713 2478
-544 862 12	

Note

We do not explicitly require $\triangle ABC$ to be non-equilateral because it is impossible to come up with an equilateral triangle whose vertices have integer coordinates.

