Tigger and Winnie-the-Pooh

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

The English writer Alan Alexander Milne was born in London on January 18, 1882.

Primarily he is known all over the world for his stories about the Bear Winnie-the-Pooh and his wonderful friends. One of them — a cheerful Tigger — with orange and black stripes, big eyes and an elastic tail, loves to jump, jump and jump most of all. According to the Tigger, "the most beautiful thing in tigers is that I am the only one".

So, the Tigger can **only** jump and is completely unable to run. The length of each jump is constant and equal d. The Tigger lives in the Hundred Acre Wood, and every evening from the point A goes to visit his friend Winnie the Pooh, who lives at the point B.

You need to create a program that determines the minimum length of Tigger's path from point A to point B.

Input

The first line contains 4 integers x_A, y_A and x_B, y_B — the coordinates of two different points A and B ($-150 \le x_A, y_A, x_B, y_B \le 150$). The second line contains a single integer d — the length of the Tiggers jump ($1 \le d \le 150$).

Output

In the first line write the number n — the number of jumps in the shortest path. In the next n lines print two real numbers — the coordinates of (x_i, y_i), in which the Tigger will appear after the i-th jump. The answer is considered correct if the absolute or relative error does not exceed 10^{-5}. If there are several shortest paths, output any of them. If there is no solution, print `-1`.

Scoring

Points for each subtask are awarded only if all tests for this subtask and the necessary subtasks are successfully passed.

Subtasks	**Points**	**Limitations**	**Necessary subtasks**	**Information of verification**
1	20	$d > AB$		points
2	25	$x_A = x_B$	1	points
3	25	$y_A = y_B$	1	points
4	30		1, 2, 3	points

Examples

standard input	standard output
0 0 1 1 1	2 0.0000000000 1.0000000000 1.0000000000 1.0000000000
0 0 6 8 5	2 3.0000000000 4.0000000000 6.0000000000 8.0000000000