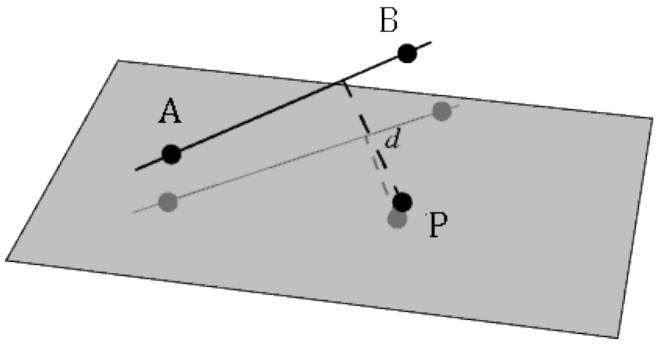
1240 – Point Segment Distance (3D)

Given a segment in 3D space, identified by **A(x_1, y_1, z_1)**, **B(x_2, y_2, z_2)** and another point **P(x, y, z)** your task is to find the minimum possible Euclidean distance between the point **P** and the segment **AB**.



Input

Input starts with an integer **T (≤ 10000)**, denoting the number of test cases.

Each case starts with a line containing nine integers **x_1, y_1, z_1, x_2, y_2, z_2, x, y, z**. The magnitude of any integer will not be greater than **100**.

Output

For each case, print the case number and the distance. Errors less than **10^{-6}** will be ignored.

Sample Input	Output for Sample Input
2 0 0 1 0 1 1 0 1 0 0 0 0 1 1 1 0 0 1	Case 1: 1 Case 2: 0.8164965809