H - Trapezoid Walkway

You are planning to place a small, prefabricated gazebo in your back yard, with a paved walkway connecting it to your back porch, using paving stones. The stones come in a variety of sizes, but they are all shaped like isosceles trapezoids. As illustrated on the left of Figure 1, an isosceles trapezoid is what you get if you take an isosceles triangle and cut off a corner with a line that is parallel to the base. We can describe such a paving stone with three parameters: the length of one of its parallel edges, *a*, the length of the other parallel edge, *b*, and the perpendicular distance, *h*, between these edges.

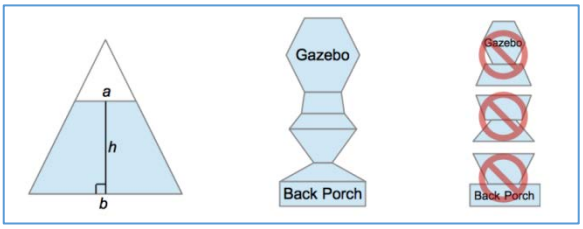

Figure 1: Isosceles trapezoid shape (left), walkway example (center) and join requirements (right).

You can build a walkway by joining the parallel edges of the paving stones, with one parallel edge meeting the back porch at the start, and another meeting the gazebo at the end. You want your walkway to look nice, so you will not permit any of the situations illustrated on the right side of Figure 1. Where two paving stones meet, their edges must be exactly the same length. Likewise, where a paving stone meets the back porch or the gazebo, its edge must be exactly the same length. Fortunately, your home improvement store has a wide selection of different trapezoid-shaped paving stones, priced at 2 cents per square centimeter of surface area. The length of the walkway is not relevant, but you must determine the least expensive way to build the walkway.

Input

Input consists of multiple test cases. Each test case starts with a positive integer, n ($1 \leq n \leq 1000$), the number of different types of paving stones available. The next n lines each describe a type of stone by giving the lengths of its sides, *a*, *b* then *h* (height). These three values are positive integers, measured in centimeters and not greater than 1000. No two types of stones are identical, but you can use as many of each type as you need. The last line of each test case contains the width of the back porch where the walkway will start, followed by the width of the edge of the gazebo where the walkway will end. A value of zero for n marks the end of all test cases.

Output

For each test case, print the total cost, in dollars, for the least expensive walkway that meets your requirements. It will always be possible to build such a walkway. The amounts are precise to two digits, with the third calculated digit rounded upward if it is 5 or greater.

Sample Input	Sample Output
6 120 350 60 120 150 95 240 300 60 240 350 220 150 300 100 300 350 120 120 240 2 100 140 50 100 140 80 140 100 2 150 250 100 150 250 60 150 150 0	1030.50 120.00 0.00

Source: 2013 ACM-ICPC North American Qualifier