Problem D: Bowlstack

Baking bread is my favourite spare-time pursuit. I have a number of stainless steel mixing bowls with straight sides, a circular bottom and a wider circular top opening. Geometrically, my bowls are truncated circular cones and for this problem, the thickness of the metal may be disregarded.

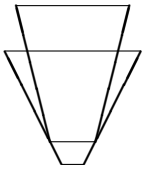
I store these bowls stacked in the natural way, that is with a common vertical axis, and I stack them in an order that minimises the total height of the stack. Finding this minimum is the purpose of your program.

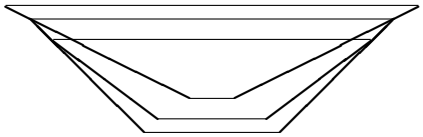
Input

On the first line of the input is a positive integer, telling the number of test cases to follow. Each case starts with one line containing an integer n, the number of bowls ($2 \leq n \leq 9$). The following n lines each contain three positive integers h, r, R, specifying the height, the bottom radius and the top radius of the bowl, and $r < R$ holds true. You may also assume that $h, r, R < 1000$.

Output

For each test case, output one line containing the minimal stack height, truncated to an integer (note: truncated, not rounded).





Sample input	**Sample output**
2 2 60 20 30 40 10 50 3 50 30 80 35 25 70 40 10 90	70 55

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