

Problem A. Final Exam

Input file: *standard input*
Output file: *standard output*
Time limit: 12 seconds
Memory limit: 256 mebibytes

Rikka is a talented student.

She spends almost every day on ICPC. But the final exam is approaching.

Rikka plans to grasp- the last minute to review the courses before the exam. She has up to M minutes for review and then takes n consecutive exams. If Rikka spends x minutes on the review for the i -th exam, she would get $f_i(x)$ points, where $f_i(x) = \max\{0, \min\{d_i, a_i x^2 + b_i x + c_i\}\}$ with the exam-specific parameters a_i, b_i, c_i, d_i .

Rikka wants to maximize the total score of her n exams. Note the minutes she spends in reviewing a certain course can be any non-negative real number. Also, she does not have to spend all of her M minutes on the review so that she can spend more time on ICPC.

Input

The first line contains an integer n and a real number M .

Each of the following n lines contains four real numbers a_i, b_i, c_i, d_i , denoting the parameters of all the n exams.

It is guaranteed that $1 \leq n \leq 100\,000$, $0 < M \leq 10^8$, $|a_i| \leq 10$, $|b_i| \leq 5000$, $0 \leq c_i \leq d_i \leq 5000$, and all real numbers in the input are given with exactly three decimal places.

It is guaranteed that there are at most 18 exams with $a_i > 0$.

Output

You need to output d , the maximum total score that Rikka can get. Assuming the correct result is d^* , you need to ensure that $\frac{|d-d^*|}{\max\{d^*, 1\}} \leq 10^{-6}$.

Example

standard input	standard output
4 2.000 0.000 7.000 3.000 10.000 -1.000 10.000 3.000 10.000 -2.000 10.000 3.000 10.000 -3.000 10.000 3.000 10.000	29.5734198185