Studying For Exams

Problem ID: studying

It is exam time! You have, of course, been spending too much time participating in various programming contests and have not done much studying. Now you have N subjects to study for, but only a limited amount of time before the final exams. You have to decide how much time to allocate to studying each subject, so that your average grade over all N subjects is maximized.

Photo by CollegeDegrees360 cc by-sa 2.0

As a seasoned programming contest competitor, you recognize immediately that you can determine the optimal allocation with a computer program. Of course, you have decided to ignore the amount of time you spend solving this problem (i.e. procrastinating).

You have a total of T hours that you can split among different subjects. For each subject i, the expected grade with t hours of studying is given by the function $f_i(t) = a_i t^2 + b_i t + c_i$, satisfying the following properties:

- $f_i(0) \geq 0$;
- $f_i(T) \leq 100$;
- $a_i < 0$;
- $f_i(t)$ is a non-decreasing function in the interval $[0, T]$.

You may allocate any fraction of an hour to a subject, not just whole hours. What is the maximum average grade you can obtain over all n subjects?

Input

The first line of each input contains the integers N ($1 \leq N \leq 10$) and T ($1 \leq T \leq 240$) separated by a space. This is followed by N lines, each containing the three parameters a_i, b_i, and c_i describing the function $f_i(t)$. The three parameters are separated by a space, and are given as real numbers with 4 decimal places. Their absolute values are no more than 100.

Output

Output in a single line the maximum average grade you can obtain. Answers within 0.01 of the correct answer will be accepted.

Sample Input 1	Sample Output 1
2 96 -0.0080 1.5417 25.0000 -0.0080 1.5417 25.0000	80.5696000000

Sample Input 2	Sample Output 2
3 34 -0.0657 4.4706 23.0000 -0.0562 3.8235 34.0000 -0.0493 3.3529 42.0000	70.0731488027