

Problem 9. Crushing blow

Input file: input.txt
Output file: output.txt
Time limit: 3 seconds
Memory limit: 256 megabytes

Khodislav is playing D&D. At the moment, his character is fighting a monster and Khodislav, who is for some reason very sure in his attack, wants to destroy the enemy with the last crushing blow. His character has different weapons; the damage these weapons can cause is defined by rolling dice and characterized by three numbers n , f , and m , where n is the number of dice, f is the number of faces on each die, and m is a modifier. For instance, if $n = 3$, $f = 8$, $m = 5$, then you will need to roll three eight-faced dice, sum the results, and add five to the sum to define the damage; this is usually written as $3d8 + 5$.

To destroy the monster, a weapon must inflict damage of D or greater. Help Khodislav to choose a weapon for his character that will help him to kill the monster with maximum probability.

Dice rolls are independent; it is equally likely to roll each of the faces on a die. There are all numbers from 1 to f written on the faces of the die.

Input

In the first line of the input file, there is a single integer T — the number of tests ($1 \leq T \leq 5000$). It is followed by the description of T tests.

The first line of a test contains two integers: W — the number of character's weapons and D — the minimum required damage to the monster ($1 \leq W \leq 5000$, $1 \leq D \leq 250$).

The following W lines describe the weapons. Each line contains three integers: n — the number of the dice, f — the number of faces on each die, and m — the modifier ($1 \leq n \leq 10$, $2 \leq f \leq 20$, $-10 \leq m \leq 10$).

It is guaranteed that the total number of weapons in all tests is not greater than 5000.

Output

For each test, print a single real number on a separate line — the maximum probability of inflicting damage no less than D with a single blow. The absolute error of the answers must not exceed 10^{-11} .

Examples

| input.txt | output.txt |
|-----------|-------------------|
| 2 | 1 |
| 2 2 | 0 |
| 1 20 -3 | |
| 2 2 0 | |
| 1 11 | |
| 1 20 -10 | |
| 3 | 0.166666666666667 |
| 1 6 | 0.583333333333333 |
| 1 6 0 | 0.799600378342187 |
| 1 7 | |
| 2 6 0 | |
| 1 100 | |
| 10 20 10 | |