

Problem C. Network Transfer

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 512 mebibytes

Maksim, a well-known computer scientist in the field of networking, came up with a new protocol that Ramazan suggested to call `cerr_maksim`.

For simplicity, let us say that there are two computers in the network, and they are connected with a wire of throughput w . Files are being transferred from the first computer to the second computer. Transferring a file of size s takes $\frac{s}{w}$ seconds.

There are n files to be transferred, each has a moment t_i when it starts being transferred, size s_i and priority p_i . If multiple files are being transferred simultaneously, then wire's throughput is divided between transfers proportionally to their priorities.

For each file, calculate the moment when it will reach the second computer.

Input

The first line contains two integers n, w ($1 \leq n \leq 2 \cdot 10^5$, $1 \leq w \leq 10^7$) — the number of files and wire's throughput.

Each of the next n lines contains three integers t_i, s_i, p_i ($1 \leq t_i \leq 10^7$, $1 \leq s_i \leq 10^7$, $1 \leq p_i \leq 100$) — start time of the transfer, size and priority.

Output

Print n real numbers, i -th number being the moment when the transfer of i -th file is completed.

Your answers will be considered correct if, for each of them, its absolute or relative error does not exceed 10^{-6} .

Examples

standard input	standard output
2 10 0 100 2 4 200 1	13 30
2 10 30 200 1 10 100 2	50 20