Problem J

Olympic Games

A group of investors is thinking on investing heavily in athletes of the Brazilian delegation after the Olympics in Rio. For this, they have watched N athletes and realized that some are in declined and others in rise. Particularly, the group is looking at two attributes on each athlete: fatigue and skill. They will note the scores for these attributes of each athlete at the end of the 2016 olympics. Then the group estimated the rate at which each athlete loses or gains skill and the rate at which each athlete gets tired over time, they realized these rates are constant for both attributes.

Those who bet realize that the noted data allow you to define what they decided to call the golden athlete: an athlete who, in a given period of time is the less tired and the more skilled. It was decided that investments will be made only on golden athletes. Find out how many athletes from those who were observed will receive an investment. Consider that time $t = 0$ is the time of the Rio Olympics: no athlete that become golden before this time will be invested. Also consider that any time after the Rio Olympics should be considered regardles how large it is. An athlete who is golden athlete at time $t = 0$ will be invested.

Input

The input contains several test cases. In each test case, Input starts with a single number N ($1 \leq N \leq 10^5$), the number of athletes. Next N lines, each with 4 integer numbers: M_i, H_t, C_i, C_t ($-10^6 < H_i, H_t, C_i, C_t \leq 10^6$, $H_t, C_t \neq 0$): The initial skill ot i-th athlete, it's variation rate of skill, the initial fatigue and the variation rate of fatigue.

Output

For each test case in the input, Print a single line with the number of athletes that will receive an investment from the group.

Examples

Input	Output
3 3 2 1 2 2 2 2 2 1 2 3 2 6 1 10 5 8 8 7 12 -5 10 -2 -3 8 -3 -5 -8 -12 0 1 10 2 8 3 9 -3	1 0