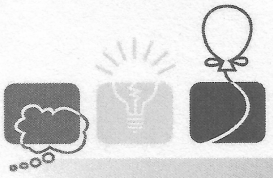

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SOUTH PACIFIC REGION

I: Diana and the Golden Apples

Time Limit: 20 second(s)

The famously fleet-of-foot Roman huntress Diana has agreed to marry any man who can beat her or even equal her in a running race. A challenger, Prince Humperdonkey of Troy, is intending to beat her in a race by leaving golden apples along the track. He believes she will be tempted to pick them up, thereby slowing her down enough that he will be able to beat her. Little does he know that Diana, who has no wish to marry anyone at present (and certainly not the loathsome Humperdonkey) is an ICPC competitor who is perfectly able to compute exactly how many golden apples she can pick up while still winning the race. You are Diana and your job is to get as rich as possible while remaining single.

Input

The input contains a single test case.

The first line of input contains 5 space-separated integers: $1 \leq L \leq 1\,000$, the length of the race in units of 100 m; $10 \leq T_d, T_h \leq 30$ the time in seconds that it takes Diana and Humperdonkey respectively to run 100 m; $0 \leq N \leq 1000$ the number of golden apples Humperdonkey has placed on the race track; and $0 < d \leq 10$, the extra time in seconds that Diana takes to cover 100 m for each additional kilogram of gold that she is carrying.

This is followed by N lines, each with 2 space-separated integers $0 < w_i \leq 50$, the weight of the i^{th} apple in kg and $0 \leq x_i < L$, the distance of the i^{th} apple from the start of the track in units of 100 m.

Output

A single integer $W \geq 0$, being the maximum weight in gold apples that Diana can be carrying when she crosses the finish line if she is to finish ahead of Prince Humperdonkey. If Diana is unable to beat Humperdonkey the output line should instead be

```
Diana marries Humperdonkey
```

Sample Input and Output

Sample Input 1	Output for Sample Input
20 10 16 4 2 2 8 3 9 4 10 30 18	5

Sample Input 2	Output for Sample Input
16 18 18 0 2	Diana marries Humperdonkey