The 2019 Ethiopian Collegiate Programming Contest

Problem F
Dryer
Time Limit: 1 Second

You have n wet clothes you just pulled off the washer. You also have an electronic dryer. The dryer is large enough to dry all the clothes in one run. You can control the temperature of the drying air. However, if you dry all the clothes at a high temperature, some clothes will be damaged. Precisely, let t_i denote the highest temperature at which the i-th cloth can be dried without damage and let w_i denote the wetness of the i-th cloth. If you dry this cloth at the temperature T (of course, $T \leq t_i$), it will take $m_i = 30 + (t_i - T) w_i$ minutes. If you dry two or more clothes at once, the time the dryer takes is the longest m_i of these clothes. You should dry all the clothes without damage.

Because the dryer uses a lot of electricity, you are going to partition n clothes into at most k groups and runs the dryer for each group. Given n clothes with t_i's and w_i's, write a program to find the minimum total time to dry all the clothes without damage.

$t_1=50$ $t_2=70$ $t_4=95$ $t_3=90$
$w_1=20$ $w_2=3$ $w_4=1$ $w_3=10$

$temperature=50, time=90$ $temperature=90, time=30$
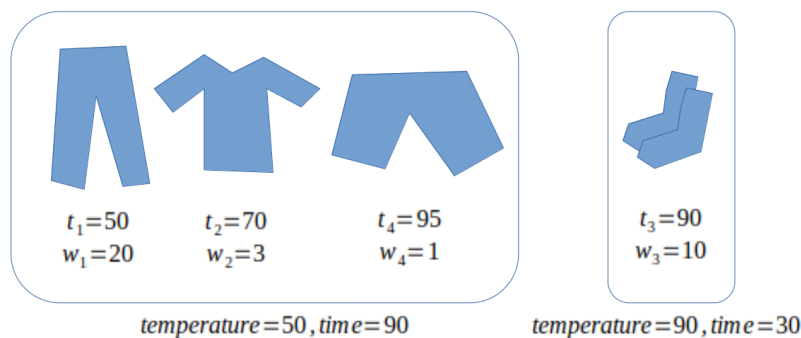
This figure illustrates an example of $n = 4, k = 2$. In this case, the total time is $90 + 30 = 120$ minutes.

Input
Your program is to read from standard input. The first line contains two integers n ($1 \leq n \leq 1,000$) and k ($1 \leq k \leq 3$). In the following n lines, the i-th line has two integers t_i ($40 \leq t_i \leq 100$) and w_i ($0 \leq w_i \leq 100$).

Output
Your program is to write to standard output. Print exactly one line containing the minimum total time as an integer.

The following shows sample input and output for three test cases.

Sample Input 1

```
4 2
50 20
70 3
90 10
95 1
```

Output for the Sample Input 1

```
120
```

Sample Input 2

```
4 2
50 20
70 3
90 1
95 1
```

Output for the Sample Input 2

```
85
```

Sample Input 3

```
1 3
40 4
```

Output for the Sample Input 3

```
30
```