

Hedgehogs communicate via complex calls. Hedgehogs with better calls can communicate a longer distance. Consider n Hedgehogs (working together) on the X-axis, with coordinates X_i for $1 \leq i \leq n$, and communication ability A_i , then 2 hedgehogs can communicate if and only if $|X_i + X_j| \leq A_i + A_j$.

Exactly k hedgehogs are not underground looking for food, and can currently communicate and lookout for attacking Eagles. The remaining $n - k$ hedgehogs are foraging for food. The units of food each hedgehog can forage underground each day is given by S_i . Each Hedgehog that is communicating can increase their communication ability A_i by D from consuming D unit of food.

Compute the minimal food cost on any given day for all pairs of hedgehogs to be able to communicate directly. If there is food surplus, just print a negative integer indicating negative food cost.

Input

A number of of inputs (≤ 50), each starting with two integers n and k are given ($1 \leq k \leq n \leq 100000$).
On each of the following n lines are X_i, A_i, S_i ($1 \leq X_i, A_i, S_i \leq 1000000000$).

Output

For each input, output the minimal food cost (or maximal gain).
In case of a gain, the printed number should be negative.

Sample Input

```
5 3
41 632 33
131 22 43
871 32 93
1211 62 153
1593 52 21
```

Sample Output

```
412
```