

# Card Game

Time Limit: 1.0s  
Memory Limit: 256MB

## Task Description:

Gug has a row of  $N$  cards and wants to play a little game with you. On the  $i$ th card, there is an operator (In this case,  $+$ ,  $-$ , or  $*$ ), and two numbers,  $A_i$  and  $V_i$ . You are to take a subset of these cards (Note: you may take all or none of the cards). You start out with the number 0, for each card you take, you perform the operator on your number with the number  $A_i$ , and you score  $V_i$  points. However, if at any point your number exceeds  $K$  or falls less than  $-K$ , you instantly lose the game. Note that you are **not** allowed to rearrange the cards.

For example, let's say Gug has the following 5 cards:

$$N = 5, K = 5$$

+2	-3	*5	+6	-8
3	2	9	6	7

The following is a valid, but suboptimal selection of cards:

+2	-3	*5	+6	-8
3	2	9	6	7

This will score  $2 + 6 + 7 = 15$  points. Note that at any point your number never falls below  $-K$  and never exceeds  $K$ .

The following is an invalid selection of cards:

+2	-3	*5	+6	-8
3	2	9	6	7

Notice that even though your number ends with 2 ( $2*5-8$ ), during the game your number reaches 10 ( $2*5$ ) and hence is an invalid selection.

The following is the optimal selection of cards:

+2	-3	*5	+6	-8
3	2	9	6	7

You will score  $3+2+9+6 = 20$  points. Note that order of operations is processed from left to right. Your number is calculated as  $0+2=2$ ,  $2-3=-1$ ,  $-1*5=-5$ ,  $-5+6=1$ .

Given the list of  $N$  cards, find the maximum score you can achieve!

## Input

The first line will contain two integers:  $N$  and  $K$ .

The next  $N$  lines will contain a character followed by two integers, describing the operator,  $A_i$ , and  $V_i$  respectively. The character will only be '+', '-', or '\*'. Refer to sample inputs for more details.

## Output

Output one integer, depicting the maximum score you can achieve.

## Subtasks:

Subtask	Score	Bounds	Additional information
1	50	$A_i > 0$	Only the + operator will appear
2	30	$0 < A_i, V_i \leq 1,000$	-
3	20	-	No additional constraints
For all subtasks: $1 \leq N, K \leq 1,000 \quad -10^9 \leq A_i, V_i, \leq 10^9$			

## Sample Input 1

5 5  
+ 2 3  
- 3 2  
\* 5 9  
+ 6 6  
- 8 7

## Sample Output 1

20

## Sample Explanation 1

This sample was illustrated above. Notice that this sample does not satisfy subtask 1.

## Sample Input 2

6 17  
+ 6 4  
+ 1 1  
+ 4 3  
+ 3 -3  
+ 9 8  
+ 13 9

## Sample Output 2

13

## Sample Input 3

3 6  
- 1 -3  
\* -3 6  
- 7 8

## Sample Output 3

11

## Sample Input 4

3 6  
+ 1 -3  
- 9 8  
\* 0 -1

## Sample Output 4

0