D&D vs D

Your D&D (Devs & Debuggers) party is planning to kill a dragon(D) and needs to know how much damage each of you can deal in an attack. You will be given a list of damage formulas, consisting of a number of dice to roll plus or minus an attack bonus/malus. You must figure out the worst- and best-case scenario for each of your attacks.

Input Format

Line 1: An integer N for the number of your party members. Next N lines: The damage formulas for your party members, one on each line. They are all in the form "MdF S B"

where: - M = number of dice to roll - F = number of faces for each of the rolled dice - S = the sign plus or minus (+ / -) - B = the constant bonus to add or subtract

Constraints

1 ≤ N, M, F, B ≤ 100 S = + or -

Output Format

N lines: min max, which are the minimum and maximum damage that can be dealt by each party member according to their formula (one line for each party member)

Sample Input 0

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2
3d6 - 2
2d4 + 1
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Sample Output 0

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1 16
3 9
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Explanation 0

The formula 3d6 - 2 means you must roll three six-faced dice, sum their results and then subtract 2, so you will deal at least 1 damage (= 1+1+1 - 2) and at most 16 (= 6+6+6 - 2)