Problem L. Lunar Landscape

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

A satellite is surveying a possible rover landing area on the moon. The landing area is modeled as a square grid embedded in the standard coordinate system.

The satellite has taken n photos, each capturing a square area of the surface. Careful camera calibration has ensured that all photos are aligned with the grid — all four vertices have integer coordinates. Due to the satellite's changing orbit there are two types of photos:

- Photos of type `A` have sides that are parallel to coordinate axes. Such a photo is specified by giving the integer coordinates (x, y) of the square's middle point and the length of its side a — always an even integer.
- Photos of type `B` have sides at a 45° angle to the coordinate axes. Such a photo is specified by giving the integer coordinates (x, y) of the square's middle point and the length of its diagonal d — always an even integer.

Find the total surface area captured in the satellite photos.

Input

The first line contains an integer n ($1 \le n \le 200\,000$) — the number of photos. The j-th of the following n lines is either of the form "`A` x_j y_j a_j" or "`B` x_j y_j d_j" representing a photo of type `A` or `B`, respectively. The x_j and y_j are the integer coordinates of the middle point of the photo ($-1\,000 \le x_j, y_j \le 1\,000$). The a_j and d_j are even integers ($2 \le a_j, d_j \le 1\,000$) — the side length and the diagonal length, respectively.

Output

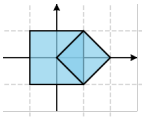
Output a number with **exactly two** digits after the decimal point — the total area of the surface. The answer has to exactly correspond to the judge's solution (no rounding errors are tolerated).

Example

standard input	standard output
2 A 0 0 2 B 1 0 2	5.00
8 A -7 10 4 B 3 10 8 A -6 6 6 A -2 5 8 B 3 -1 8 B -7 -4 8 A 3 9 2 B 8 6 6	205.50

Note

Sample 1



Sample 2