Problem E: Expanded Excel
Filename: excel
Time limit: 1 second

A sparse spreadsheet is one where many of the cells are unfilled. To store these sheets, it’s helpful just to store information about each non-empty entry, instead of the typical two dimensional grid. For each non-empty entry, the row number, column letter (for this problem we’ll limit the columns to 26 so we don’t have to deal with column labels with more than 1 letter!) and cell contents (a string) must be stored.

Here is an example of storing a spreadsheet in this manner:

3 A hello
5 E bye
2 G elephant

Unfortunately, this storage must be expanded for the end user, so that it looks like a typical two dimensional grid. For this spreadsheet, the expanded sheet might look like this:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>elephant</th>
</tr>
</thead>
<tbody>
<tr>
<td>hello</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bye</td>
</tr>
</tbody>
</table>

Since the last non-empty row is 5, we only need to display 5 rows. Since the last non-empty column is G, we only need to display 7 columns. Each row has a fixed height (in pixels). The columns work differently though. There is a default column size (in pixels). If no entry exceeds this length in a column, then that will be the width of the column. (For this example, this is true for all but the last column.) If an entry width exceeds the default column width, then the column is expanded as needed, to fit the largest entry in the column.

Thus, the information necessary to calculate the area (in square pixels) of an expanded view of an Excel spreadsheet (in addition to its compressed storage) is:

1) The height in pixels of a single row.
2) The default width in pixels of a single column.
3) The width of a single character (all characters have the same width) in pixels.

Write a program to automatically calculate this area!
The Problem
Given the height in pixels of a single row of an expanded Excel sheet, the default width in pixels of a single column of an expanded Excel sheet, the width of a single character in pixels, and the contents of the sheet in compressed form, calculate the area of the expanded Excel sheet in square pixels.

The Input
The first line of input will contain a single positive integer, $c$ ($c \leq 20$), representing the number of input cases to process. The input cases follow. The first line of each input case will contain four space separated positive integers: $n$ ($n \leq 100$), the number of non-empty entries in the sheet, $h$ ($h \leq 30$), the height of each row in pixels, $w$ ($w \leq 200$), the default width of each column in pixels, and $d$ ($d \leq 30$), the width of each character in pixels.

The following $n$ lines each contain information about one non-empty entry in the spreadsheet. It is guaranteed that each of these lines will be describing a distinct cell in the spreadsheet. Each of these lines will contain an integer $r$ ($r \leq 100$), representing the row number of the cell being described, an uppercase letter $L$, representing the column heading of the cell being described, and a string $s$, representing the contents of the sheet at row $r$, column $L$. $s$ will only contain alphanumeric characters and be in between 1 and 50 characters long.

The Output
For each input case, on a line by itself, output the area of the expanded Excel spreadsheet in square pixels.

Sample Input

```
2
3 15 80 15
3 A hello
5 E bye
2 G elephant
100 100 30
20
100 Z bread
1 A rye
```

Sample Output

```
45000
5300000
```