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Facebook Hacker Cup 2012 Qualification Round

This round has ended. Feel free to use the problems for practice though!

Billboards

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We are starting preparations for Hacker Cup 2013 really early. Our first step is to prepare billboards to advertise billboards, but we need your help to design them.

The billboards are of different sizes, but are all rectangular. The billboard widths and heights are all integers. The text we want printed. We want you to tell us how large we can print the text, such that it fits on the billboard (the text must be printed in a single line, and the text must be printed in a monospace font, meaning that all characters are of the same horizontal space, as do space characters). The characters in our font are of equal width and height, and adjacent characters or adjacent rows. If you print a word on one line and print the next word on the next line,

Let's say we want to print the text "Facebook Hacker Cup 2013" on a 350x100" billboard. If we use a font size of 30, "Facebook" on the first line, "Hacker Cup" on the second and "2013" on the third. The widest of the three lines is 99", so the total height is 99". We cannot go any larger.

Input

The first line of the input file contains a single integer T : the number of test cases. T lines follow, each representing a test case. Each line contains two integers W and H are the width and height in inches of the available space. S is the text to be written.

Output

Output T lines, one for each test case. For each case, output "Case #: s", where t is the test case number (starting from 1), s is the size in inches per character, we can use. The size must be an integral number of inches. If the text does not fit within the given dimensions, output -1.

Constraints

 $1 \leq T \leq 20$ $1 \leq W, H \leq 1000$

The text will contain only lower-case letters a-z, upper-case letters A-Z, digits 0-9 and the space character

The text will not start or end with the space character, and will never contain two adjacent space characters

The text in each case contains at most 1000 characters

Example input

```
5
20 6 hacker cup
100 20 hacker cup 2013
10 20 MUST BE ABLE TO HACK
55 25 Can you hack
100 20 Hack your way to the cup
```

```
Case #1: 3
Case #2: 10
Case #3: 2
Case #4: 8
Case #5: 7
```



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