

Rectangle Tiling

We say that a 2-dimensional, rectangular word w of size $n \times m$ (imagine it as a board with letter written in the squares) can be tiled with a rectangular pattern p if there are such occurrences of p in w (but not necessarily all of them) that no two of them overlap and each symbol (square) of w is covered by one of them. Given such word w , find a rectangular pattern p of smallest size (area) which the word w can be tiled with.

Input

The first line of input contains a number t ($1 \leq t \leq 100$) that indicates the number of test cases to follow. Each test case begins with a line consisting of two positive integers n and m ($1 \leq n, m \leq 1000$) indicating dimensions of the board. n lines follow, each of them containing m small letters of the English alphabet (a, b ... z).

Output

For each test case output the smallest possible area of a pattern p that can be used to tile the given board.

Example

Input:

```
3
4 3
aaa
aaa
aaa
aaa
4 4
abab
cdcd
abab
cdcd
3 4
aaaa
aaaa
aaab
```

Output:

```
1
4
12
```