

# 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
```