

Prefix goodness of a set string is length of longest common prefix*number of strings in the set. For example the prefix goodness of the set {000,001,0011} is 6.You are given a set of binary strings. Find the maximum prefix goodness among all possible subsets of these binary strings.

Input

First line of the input contains T (≤ 20) the number of test cases. Each of the test cases start with n (≤ 50000) the number of strings. Each of the next n lines contains a string containing only '0' and '1'. Maximum length of each of these string is 200.

Output

For each test case output the maximum prefix goodness among all possible subsets of n binary strings.

Sample Input

```
4
4
0000
0001
10101
010
2
010100101010101010
110100101010101010
3
010101010101000010001010
010101010101000010001000
010101010101000010001010
5
01010101010100001010010010100101
01010101010100001010011010101010
00001010101010110101
0001010101011010101
000101010101010001
```

Sample Output

```
6
20
66
44
```