CP #27: Problem

The formula of El Mamum, Calif of Baghdad around 800 A.D lacked parenthesis and was ambiguous which is 1 + 2 ∗ 3 ∗ 4 + 5, which had its origin in the financial accounts of a camel transaction. So, he decided to ask savants to provide him with a method to find which interpretation is the most advantageous for him, depending on whether is is buying or selling the camels.

You are commissioned by El Mamum to write a program that determines the maximum and minimum possible interpretation of a parenthesis-less expression.

Input Format

Input consists of an integer N, followed by N lines, each containing an expression. Each expression is composed of at most 12 numbers, each ranging between 1 and 20, and separated by the sum and product operators '+' and '*'.

Output Format

For each given expression, the output will echo a line with the corresponding maximal and minimal interpretations, following the format given in the sample output.

Sample Input 0

```
3
1+2*3*4+5
4*18+14+7*10
3+11+4*1*13*12*8+3*3+8
```

Sample Output 0

```
The maximum and minimum are 81 and 30.
The maximum and minimum are 1560 and 156.
The maximum and minimum are 339768 and 5023.
```