11203 Can you decide it for ME?

As you should know, a **formal system** consists of a set of **axioms** and set of inference or **production rules**. Theorems, in general, are results that can be obtained upon the axioms and the inference rules of the system. Deciding if a statement is a theorem of a given formal system is not a trivial matter; in fact, for some systems it is not even possible, as we know by Gödel's incompleteness theorem.

ME is a formal system with an infinite number of axioms and just one production rule. There are only three symbols that may appear in any axiom of ME: the capital letters M and E, and the symbol ?. In spite of the infinite number of axioms, there is an easy way of identifying them:

- **Axiom definition:** An axiom of ME is a string of the form xM?Ex? where x is a string of one or more ? symbols.

Notice that the word xM?Ex? itself is not an axiom, because x is not a valid symbol of ME; it is just a pattern to describe the axioms. But ??M?E??? is indeed an axiom, because it fits the pattern, just replacing x with ??

There is another type of valid strings in the system ME: the *theorems*. **Every axiom is a theorem of ME**. In addition, the following production rule gives rise to an infinite number of theorems:

- **Production rule:** If xMyEz is a theorem then xMy?Ez? is also a theorem, where x,y,z are strings of one or more ? symbols.

For instance, the string ??M?E??? is a theorem, because it is an axiom, and the string ??M??E???? is also a theorem, since it can be obtained upon the theorem ??M?E??? and the production rule.

Can we decide if a given string is a theorem of ME? Sure!, there is a decision algorithm for the system ME. But your goal is less general: just write a program that reads strings with at most 50 symbols and decides if they are theorem of ME.

Input

The input begins with a single positive integer N, on a line by itself, indicating the number of input lines following. Each input line contains a string with 1 to 50 characters (without spaces), but not necessarily restricted to the symbols of ME.

Output

For each input line, the program must print an output line with the word '`theorem`' if the test line contains a theorem, or the word '`no-theorem`' in other case.

Sample Input

```
7
??M?E???
xM?Ex?
??M??E????
M?E?
??m?e???
?M?E??
12M12E????
```

Sample Output

```
theorem
no-theorem
theorem
no-theorem
no-theorem
theorem
no-theorem
```