Homework 2

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Problem 1

The program `FLTPTest1.py` gives the following output for the given input.

Input	Output
599181055463339651776702496758089432115 3	`prime`
19822271254366240129112696248055903545291688310293	`composite`
271751460953412243574650375322181330929301452213 79	`composite`
4702877858580764415667235078667510929270158248348819067635 07	`prime`
693711969678975263512873427191894879124339838606362751311911118403883	`composite`

Problem 2

Upon running, the program gave the following output:

```
29341
46657
75361
```

The output varies between runs, due to the random testing for Fermat witnesses. The output of the first run is shown here. There are no non-Carmichael composites in this output (that is, they are all Carmichael numbers).

The most simple way to improve the accuracy of the program is to increase the quantity of numbers tested by Fermat's Little Theorem within the range of 1 and $n - 1$. For non-Carmichael composites, each additional random number tested will double the accuracy.