Sample Quiz - Review of Grade 11

Problem #1 - AddNumbers.java

Write a program that will add the numbers from 1 to n where n is a positive number read from user input. You do not need to check that n is positive.

Problem #2 - AvgMark.java

Read in any number of marks (grades) from the user and then output the average of all marks as well as the max mark and the min mark. User enters negative mark to quit and display the results.

Problem #3 - Cubesums.java

The number 153 has the property that it is equal to the sum of the cubes of its digits:

$1^3+5^3+3^3 = 153$.

We call the number 153 a *cubesum*. For example, the number 123 is **not** a cubesum because if you cube the digits, you would get 36 and NOT 123.

Write a **complete** Java program that **repeatedly** reads in a number from the user and determines if it is a cubesum or not. If the user enters a negative value, then the program will quit. If the inputted number is a cubesum, simply ouput “cubesum”. If it is not a cubesum, output “not a cubsum”. If the number is not a positive three digit number, output “incorrect input”.

Here is a **sample** input/output table:

153	Cubesum
127	Not a cubesum
99	Bad input
1000	Bad input
-1	Stop the program

Problem #4 - FiftyPrimes.java

Write a program that will find and output the first 50 prime numbers. No input is required for this program. Your output should be 2, 3, 5, 7, 11... until you have displayed 50 of these.

Problem #5 - Eleven.java

Write a program that reads a positive integer and then checks to see whether or not the integer is divisible by 11. For the divisibility test, use the following algorithm, based on one given by the mathematician Charles S. Dodgson (also known as Lewis Carroll).

- As long as the number has more than one digit, shorten it by deleting the units digit and subtracting this digit from the resulting number.

- The original number is divisible by 11 if and only if the final number is equal to zero.

You may assume that the input is valid and that it can be stored as a long value. Output from the program should consist of the original number followed by any shortened numbers obtained by applying the algorithm followed, finally, by a message stating whether or not the original number was divisible by 11.

As an example, input of 48070 should produce output like the following:
48070
4807
473
44
0
48070 is divisible by 11

Problem #6 - Rectangle.java

Write a program that will read in two dimensions from the user: the first representing the number of rows in a rectangle and the second representing the number of columns. Your program will print a hollow (open) rectangle with those dimensions using '*' character. For example, if the first input is 4 and the second is 5, your program should print the pattern:

```
*****
*   *
*   *
*****
```

Assume that the inputs for height and width are both larger than two.