Roman Numerals

Assignment:

1. You will create a class with two `public static` methods. One will receive an `int` number and display the result of that integer converted into a Roman Numeral. The other method will receive a Roman Numeral `String` and display the integer value of the Roman Numeral.

2. These two methods are `static` because there is no reason to create an object just to run these calculations.

3. Think of using helper methods to reuse algorithms needed to solve these problems.

4. Assume that your client gives you valid Roman Numerals and the Arabic numbers are positive and less than 4000.

Instructions:

Roman Numerals work differently than our normal Arabic number system. Roman Numerals have symbols, all in capital letters (and sometimes in lower case), which represent Arabic numbers. Roman Numerals have been used for identifying movie sequels (i.e., *The Godfather: Part II*), for publication copyright dates, for numbering monarchs such as Queen Elizabeth II, and for numbering Super Bowls. See the following table for the Roman Numerals symbols up to 1000.

Roman Numeral	Arabic Number
I or i	1
V	5
X	10
L	50
C	100
D	500
M	1000

Usually, numbers are formed by stringing the Roman numerals together and adding them up to make the required number (i.e., II = 2, or XII = 12). If smaller numbers follow larger numbers, the numbers are added (i.e., VIII = 5 + 3 or 8), but if a smaller number precedes a larger number, the smaller number is subtracted from the larger number (i.e., IX = 10 - 1 or 9).

There is shorthand for the case when there are four of the same symbols in a row. Instead of IIII for 4, it is written as IV or 5 - 1 = 4. This only applies to symbols that represent powers of ten. Since our numbers will be less than 4000, this only makes sense for I, X and C. Some people think this means you can write IC for 99 but that is not going to be allowed. When using this shortcut, a symbol can only precede a symbol whose value is 5 or 10 times its own value.

For example, X (10) can only precede L (50) or C (100). So XL (40) is acceptable, but XD (490?) is not.

Roman Numeral	Arabic Number
XLVI	46
XCIX	99
MDCCCXIX	1819
DCXLIX	649
MCMLXXXIII	1983

Driver

```java
/**
 * Dominguez
 */
public class RomanNumeralsDriver
{
    public static void main( String args[] )
    {
        boolean repeat = true;
        do
        {
            //String ceasar = "MDCXXVI";
            System.out.print("\n-------------------------------------" +
                                "\nEnter a roman numeral...");
            String ceasar = SavitchIn.readLine();
            RomanNumerals.romanToArabic( ceasar );
            System.out.print("\n-------------------------------------" +
                                "\nEnter a positive integer...");
            int num = SavitchIn.readLineInt();
            RomanNumerals.arabicToRoman( num );
            System.out.print("\n\nDo you have more numbers? (y/n)...");
            char ans = SavitchIn.readLineNonwhiteChar();
            if( ans == 'n' || ans == 'N' ) repeat = false;
        }while( repeat );
    }
}
```

SAMPLE OUTPUT

```
-----------------------------------------------------
Enter a roman numeral...DCLXXXIV

  DCLXXXIV    ==>    684
-----------------------------------------------------
Enter a positive integer...684

  684    ==>    DCLXXXIV

Do you have more numbers? (y/n)...n
```