Problem 1. Convert the following binary numbers to decimal representation:

   a) 0011 0011₂ = 51
   b) 1010 1001₂ = 169
   c) 1100 1001 0011₂ = 3219

Problem 2. Convert the following decimal numbers to binary representation:

   a) 42 = 0010 1010₂
   b) 255 = 1111 1111₂
   c) 300 = 0001 0010 1100₂

Problem 3. What decimal values can be represented using one bit? one nibble? one byte? one word?

   One bit can represent decimal values 0 or 1.
   One nibble can represent decimal values 0 through 15.
   One byte can represent decimal values 0 through 255.
   One word can represent decimal values 0 through 65535.
   In general, $n$ bits can represent decimal values 0 through $2^n - 1$.

Problem 4. Perform the following binary additions:

   a) 0100 1101₂ + 1010 0011₂ = 1111 0000₂
   b) 0101 1101₂ + 0000 0011₂ = 0110 0000₂
   c) 1111 1111₂ + 1111 1111₂ = 0001 1111 1110₂

Problem 5. Write Visual Basic code for a program that will accept a person’s first name and last name in separate text boxes and, when a “Go!” button is pressed, print the first and then last name in a third text box.

   NOTE: For extra credit, program your answer in VB and include screen shots of the code and running program in your homework paper.

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
    Dim first As String = TextBox1.Text
    Dim last As String = TextBox2.Text
    TextBox3.Text = first & " " & last
End Sub
```
Problem 6. Write Visual Basic code for a program that will accept a vehicle’s distance and speed and in separate text boxes and, when a “Go!” button is pressed, print the time traveled of the vehicle in a third text box.

NOTE: For extra credit, program your answer in VB and include screen shots of the code and running program in your homework paper.

Problem 7. Text, Page 71, Problems 8 and 10

a. Problem 8

\[ 14 \mod 4 = 3 \]

\[ R^2 = 2 \]
b. Problem 10

14 \ 4 = 3

Problem 8. Text, Page 71, Problem 12. Not valid (& not allowed)

Problem 9. Text, Page 71, Problems 14, and 16

a. Problem 14. Not valid
b. Problem 16. Not valid

Problem 10. Text, Page 72-73, Problem 32

A = 4
B = 5 * A = 20
Output = A + B = 24

Problem 11. Text, Page 73, Problem 38

3 * n = 3 * 2 = 6
n = n + n = 2 + 2 = 4
n + m = 4 + 5 = 9
n - m = 4 - 5 = -1