# Practice with Data Representation for Group B

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer each of the following questions. Please do your work “by hand” and show your work, in the same way it is shown in each example. You may use a calculator to check your arithmetic after you have done the problem.

I. **Decimal to binary conversion**

Example: 10 Solution: 10 ÷ 8 = 1

2 ÷ 4 = 0

2 ÷ 2 = 1

0 ÷ 1 = 0

Answer: 00001010

Convert each of the following decimal numbers to their 8 bit binary equivalent:

1. 9
2. 35
3. 63
4. 98

II. **Binary to decimal conversion**

Example: 00000110 Solution: 0 × 1 = 0

1 × 2 = 2

1 × 4 = 4

Answer: 2 + 4 = 6

Convert each of the binary numbers (unsigned) to their decimal equivalent:

1. 10010100
2. 00000011
3. 11111111
4. 01100010
5. 11110000

III. **Binary to hexadecimal conversion**

Example: 11010011 Solution: 1101 = 13 = D

0011 = 3

Answer: D3

Convert each of the following binary numbers to their hexadecimal equivalent:

1. 00110100
2. 01111000
3. 00111111
4. 11011000

IV. **Hexadecimal to binary conversion**

Example: 7D Solution: 7 = 0111

D = 13 = 1101 13/8 = 1

5/4 = 1

1/2 = 0

1/1 = 1

Answer: 01111101

Convert each of the following hexadecimal numbers to their binary equivalent:

1. 21
2. AC
3. 6D
4. 00

V. **ASCII to decimal**

Example: X = 88 (from the table)

Give the decimal representation of the ASCII values for each of the following characters:

1. M
2. m
3. ?
4. 9