St. Mary's University
Department of Computer Science
Introduction to Computing Science - Worksheet 2

1. Evaluate the following operations using **unsigned binary** representation(use 8 bits)
   a. $45 + 89$
   b. $112 - 65$
   c. $29 - 12$
   d. $36 - 27.75$
   e. $10 * 25$
   f. $8 * 15$
   g. $4.25 * 4$
   h. $88 / 3$
   i. $19 / 2.5$
   j. $12 / 3$
   k. $(10101)_2 / (110)_2$
   l. $(01001)_2 * (1010)_2$
   m. $(101.011)_2 + (11010)_2$
   n. $(011101)_2 - (011001)_2$

2. The following numbers are signed using **sign and magnitude** representation, evaluate the following operations accordingly.
   a. $11110 + 1101$
   b. $101001 + 11001$
   c. $010101 + 1111$
   d. $1001 - 0100$
   e. $0101011 - 010101$
   f. $10101 - 111$
   g. $101 * 011$
   h. $0111 * 0101$
   i. $1100.01 * 0101.1$
   j. $01001 / 111$
   k. $11101 / 10000011$
   l. $11010.11 / 010$

3. The following numbers are signed using **1's Complement** representation, evaluate the following operations accordingly.
   a. $01111 + 11010$
   b. $1111101 + 10011$
   c. $0001111 + 01101$

4. Evaluate the following operations using **1's Complement** representation(use 8 bits)
   a. $18 + 19$
   b. $26 - 16$
   c. $-31 + 15$
   d. $-45 - 7$

5. Evaluate the following operations using **2's Complement** representation(use 8 bits)
   a. $16 + 17$
   b. $29 - 13$
   c. $-12 - 9$
   d. $-18 + 11$
   e. $5.25 * -4$
   f. $15 * -3$
   g. $-7 * -11$
   h. $-18 / 6$
   i. $-19 / -3$
   j. $29 / 4$