Due: Next Class Period

Name (Please Print) _____

Work the following problems in the space provided. Show all work and circle your answers. You may check your work using a scientific calculator, but you must be able to do these calculations by hand. Express the results in nibbles (4 bits each).

1. Convert the following decimal numbers to 8-bit sign-magnitude representation.
   (a) 23

   (b) -23

   (c) -48

   (d) -65

2. Give the 8-bit two's-complement representations of the following decimal numbers. Show your work.

   (a) 23

   (b) -23

   (c) -48

   (d) -65

3. Give the 8-bit representation of the numbers 12 and -18 in sign-magnitude and two's complement notation and show how these representations are sign extended to give 16-bit representations. Show all work. Put the answers in the table.

12 base 10	binary representation
8-bit Sign Magnitude	
sign extended to 16 bits	
8-bit two's complement	
sign extended to 16 bits	
-18 base 10	binary representation
8-bit Sign Magnitude	
sign extended to 16 bits	
8-bit two's complement	
sign extended to 16 bits	

4. Using 8-bit two's complement integers, perform the following computations. Show your work.

   (a) -34 + (-12)

   (b) 17 - 15

   (c) -22 - 7

   (d) 18 - (-5)