

1. What procedure is required to add the two 2's complement numbers 0110 1101 and 110?
  - a. take the 2's complement of the smaller number and extend it.
  - b. take the 2's complement of the negative number.
  - c. pad the shorter number with 0's.
  - d. **sign extend the shorter number.**
  - e. shift the shorter number to the left by 5 places.
2. Using two's complement encoding, subtract 11 1100 from 00 1101, and report the result as a 5-bit two's complement binary number
  - a. 10 1001
  - b. 00 1001
  - c. 10 0100
  - d. **01 0001**
  - e. 11 0101
  - f. 00 0101

*(I messed this one up, so everyone gets the point)*
3. Convert the 8-bit two's complement number 1000 1111 into decimal
  - a. -15
  - b. -241
  - c. **-113**
  - d. +143
  - e. -143
  - f. +112
4. Convert the decimal 3,297 to unsigned magnitude binary (using the minimum possible number of bits)
  - a. 1001 1101 0101
  - b. 0111 0101 0111
  - c. **1100 1110 0001**
  - d. 0 1100 1110 0001
  - e. 0 1011 1011 0011
  - f. 111 0101 1101
5. Convert the number -41 into two's complement binary representation:
  - a. 010 1001
  - b. 01 1001
  - c. 10 0111
  - d. **101 0111**
  - e. 110 1001
  - f. 101 1001
6. Add the numbers represented by x04D and x074
  - a. x11F
  - b. x0B1
  - c. **x0C1**
  - d. x0E1
  - e. x0E4

The next three questions refer to the decimal number 27.375

7. What is the fixed point representation of this number in the “hybrid” binary system using the “binary point”?
  - a. 11101.111
  - b. 11011.111
  - c. 11101.101
  - d. 11011.101
  - e. 11101.011
  - f. **11011.011**
8. What is the **normalized mantissa** or fractional part of this binary number that will be used to build the IEEE-754 floating point representation of the original number?
  - a. 011101
  - b. **1011011**
  - c. 11101011
  - d. 11101111
  - e. 11101101
  - f. 1011111
9. What is the **biased exponent** that will be used to build the IEEE-754 floating point representation of the original number (in decimal representation)?
  - a. 5
  - b. 4
  - c. 132
  - d. **131**
  - e. -122
  - f. -123

10. What is the decimal equivalent of the IEEE-754 floating point number

1 10000011 000100000000000000000000

a. -17.0

c. -4.25

e. -1.06125

b. -8.5

d. -2.125