Nicholas C. Jerla --- PHY 410 HW #1

*** All place values are powers of two, 2^N, with the first (left-most) bit representing the sign of our numbers ***

a) 10: requires 2^5 = 5-Bits

10 = 01010

b) 436: requires 2^{10} = 10-Bits

436 = 0110110100

c) 1024: requires 2^{12} = 12-Bits

1024 = 010000000000

To write a negative number in (Two's Complement) binary, write it out in binary as if it were a positive number instead,

flip all the bits, and add one to convert.

d) -13: requires 2^5 = 5-Bits

(-)01101 --> flip bits --> 10010 --> add one --> 10011

-13 = 10011

e) -1023: requires 2^{12} = 12-Bits

(-)001111111111 --> flip bits --> 110000000000 --> add one --> 110000000001

-1023 = 110000000001

f) -1024: requires 2^{12} = 12-Bits

(-)010000000000 --> flip bits --> 101111111111 --> add one --> 110000000000

-1024 = 110000000000