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Discussion Section 12
    (1) Indicates Carry Out Bit

Problem 1
        Q1.
                a.   14214
                b.   7117
        Q2. & 0x01FF
        Q3.
                a.   390
                b.   461

Problem 2
        Q1. 0xEAE
        Q2. 4015

Problem 3
        (x << 2) + (x >> 1)

Problem 4

Format A		Format B	
Bits	Value	Bits	Value
1 10110 111	-240	1 1110 0111	-240
0 01101 100	3/8	0 0101 0100	3/8
1 00000 000	-1/2048	N/A	N/A
0 00000 000	0	0 0000 0000	0
0 11000 101	832	0 (1)0000 0101	832

Problem 5
starting x 4
starting y 3
a 0x500
b 0x510
c 4
d 0x500
e 35
f 35
g 35
h 120

Problem 6
        Q1. 0111 1111
        Q2. 255

Q3.
      a. (1)00101101
      b. 301 (If using all 9 bits) 45 (If only using original 8 bits)
      c. No, the addition results in a 9-bit positive integer, but that works

Q4.
      a. 11000110
      b. -58
      c. Yes, the addition results in the unintentional flipping of the sign bit to become a negative value

Q5.
      a. (1)10111110
      b. -66
      c. No, the addition of these two negatives results correctly in a negative with a carry out

Problem 7
      Q1. 0 0000 0 00
      Q2. 1 0000 1 00
      Q3. 0 0011 0 01
      Q4. 0 0010 1 01
      Q5. 0 0001 1 10

Problem 8

Q	TRUE/FALSE	Counter Example
If $x < 0$ then $x - 1 < 0$	True	
If $x > 0$ then $x * x > 0$	False	$2^{16}*2^{16} = 2^{32} = 100...00 < 0$
(~u <= 0) == FALSE	True	
If $x < 0$ then $u > x$	True	
If $x > -y$ then $-x < y$	False	$011...11 > 100...00$, $111...11 !> 111...1110$
(x << m) >> m == x	False	$100...00 << m$ (m>=1) = $00....000$ $00...000 >> m = 00...000$
U & 0 == 0	True	
If $x >= 0$ then $~x <= -x - 1$	True	