Cody Strange
2/6/2022

1. #1
   a. -6
   b. 90
   c. -2
   d. 14803
2. #2
   a. 01100110
   b. 01000000
   c. 00100001
   d. 10000000
   e. 01111111
3. because the right most digit is equal to a '1' and it is the only odd number possible because all for the numbers are a power of 2. And to get an odd number through addition, one of your numbers has to be odd. Since 1 is the only odd number than the right most digit has to be a 1.
4. it means that the number is always going to be odd
5. #5
   a. 1100
   b. 1010
   c. 1111
   d. 1011
   e. 0000
6. #6
   a. 1100, -4
   b. 0101100, 88
   c. 1011, -5
   d. 11, -1
7. #7
   a. 1100, 12
   b. 0101100, 88
   c. 1011, 11
   d. 11, 3
8. #8
   a. No overflow
   b. Yes overflow
   c. Yes overflow
   d. Yes overflow
   e. Yes overflow
9. When you add the two numbers together before and after converting them to decimal and you get different results. Or when combining two positive numbers and the bits carry into the negative position. Or when combining two negative numbers and the result carries off of the last bit.
10. one of the bits carries past the last available position
11. Overflow occurs on a 4 bit binary number when the number is either larger than 15 or smaller than -15. When the largest number the positive number can reach by itself is 15 and the

smallest number the negative number can reach is -15 overflow cannot occur. This is because there is no negative number that will bring 15 larger, and no positive number that will make -15 smaller. This example scales with any number of bits.

12. #12
   a. 01010111
   b. 100
   c. 10100000
   d. 00010100
   e. 0000
   f. 0000

13. #13
   a. 11010111
   b. 111
   c. 11110100
   d. 10111111
   e. 1101
   f. 1101

14. #14
   a. 0111
   b. 0111
   c. 1101
   d. 0110

15. #15
   a. 0xD1AF
   b. 0x1F
   c. 0x1
   d. 0xEDB
   e.

16. #16
   a. 0001 0000
   b. 1000 0000 0001
   c. 1111 0111 0011 0001
   d. 0000 1111 0001 1110 0010 1101
   e. 1011 1100 1010 1101

17. #17
   a. -16
   b. 2047
   c. 22
   d. -32767

18. #18
   a. 0x100
   b. 0x6F
   c. 0x75BCD15
   d. 0xD4

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19. #19
   a. 0x3919
   b. 0x6FB6
   c. overflow
   d. overflow

20. #20
   a. 0x5468
   b. 0x0204
   c. 0xFFFF
   d. 0x32A3

21.

Q_1	Q_2
0	1
0	1
0	1
0	1
1	1
1	1
1	1
0	0

22.

Q_1	Q_2
1	0
1	1
1	1
0	1

23. #23
   a. Hello!
   b. hELLO!
   c. Computers!
   d. LC-3

24. OR 0011 0000

25. #25
   a. 1111 1010
   b. 0001 1001
   c. 1111 1000
   d. 0000 0001