**5.9** Add the following two 12-bit binary 2's complement numbers. Then convert each number to decimal and check the results.

| | |
|---|---|
| 011001101101 | $1645_{10}$ |
| + 111010111011 | + $3771_{10}$ |
| **010100101000** | **$5416_{10}$** |
| 101011001100 | $2764_{10}$ |
| + 111111111100 | + $4092_{10}$ |
| **101011001000** | **$6856_{10}$** |

We forget the last bits to avoid the overflow but the result wouldn't be the same $010100101000_2 = 1320_{10}$ but $1010100101000_2 = 5416_{10}$ and $101011001000_2 = 1320_{10}$ but $1101011001000_2 = 6856_{10}$

**5.10** Given the positive number 2468, what is the largest positive digit that you can add that will not cause overflow in a four-digit decimal, 10's complement number system?

**10000 – 2468 = 7532, so 7531 is the largest number**

**5.11** In 12's complement base 12, how would you know if a number is positive or negative?

**When you consider 3 digit in 12's complement base 12, split it in half and you will find 0-5 positive and from 6-11(or B) negative.**

**5.17 a.** Convert the number $123.57 \times 10^{15}$ to the format SEEMMMM, with the exponent stored excess - 49. The implied decimal point is to the right of the first mantissa digit. **(Not with us)**

**b.** What is the smallest number you can use with this format before underflow occurs? **(Not with us)**

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