

More examples

1's complement

$$5+2$$

$$\begin{array}{r} 0101 \\ 0010 \\ \hline 0111 \end{array}$$

$$5-2$$

$$\begin{array}{r} 0101 \\ 1101 \\ \hline \text{1}0010 \\ \text{L} \rightarrow 1 \\ \hline 0011 \end{array}$$

$$2-5$$

$$\begin{array}{r} 0010 \\ 1010 \\ \hline 1100 \end{array}$$

$$-2+5$$

$$\begin{array}{r} 1101 \\ 0101 \\ \hline \text{1}0010 \\ \text{L} \rightarrow 1 \\ \hline 0011 \end{array}$$

$$-5+2$$

$$\begin{array}{r} 1010 \\ 0010 \\ \hline 1100 \end{array}$$

$$-5-2$$

$$\begin{array}{r} 1010 \\ 1101 \\ \hline \text{1}0111 \\ \text{L} \rightarrow 1 \\ \hline 1000 \end{array}$$

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1's comp:

- End carry added back in
- All numbers in 1's comp form

$$12+2$$

$$\begin{array}{r} 0000\ 1100 \\ 0000\ 0010 \\ \hline 0000\ 1110 \end{array}$$

$$12-2$$

$$\begin{array}{r} 0000\ 1100 \\ 1111\ 1101 \\ \hline \text{1}00001001 \\ \text{L} \rightarrow 1 \\ \hline 0000\ 1010 \end{array}$$

$$75-23$$

$$\begin{array}{r} 0100\ 1011 \\ 1110\ 1000 \\ \hline \text{1}0011\ 0011 \\ \text{L} \rightarrow 1 \\ \hline 0011\ 0100 \end{array}$$

$$12-3$$

$$\begin{array}{r} 0000\ 1100 \\ 1111\ 1100 \\ \hline \text{1}00001000 \\ \text{L} \rightarrow 1 \\ \hline 0000\ 1001 \end{array}$$

2's comp

$$\begin{array}{r} 5+2 \\ 0101 \\ 0010 \\ \hline 0111 \end{array}$$

$$\begin{array}{r} 5-2 \\ 0101 \\ 1110 \\ \hline \Delta 0011 \end{array}$$

$$\begin{array}{r} 2-5 \\ 0010 \\ 1011 \\ \hline 1101 \end{array}$$

$$\begin{array}{r} -2+5 \\ 1110 \\ 0101 \\ \hline \Delta 0011 \end{array}$$

$$\begin{array}{r} -5+2 \\ 1011 \\ 0010 \\ \hline 1101 \end{array}$$

$$\begin{array}{r} -5-2 \\ 11010 \\ 1110 \\ \hline \Delta 1000 \end{array}$$

**** 2's comp**

- End carry discarded

- All numbers in 2's comp form

~~12+2~~

$$\begin{array}{r} 12+2 \\ 00001100 \\ 00000010 \\ \hline 00001110 \end{array}$$

$$\begin{array}{r} 12-3 \\ 00001100 \\ 11111101 \\ \hline 00001001 \end{array}$$

$$\begin{array}{r} 75-23 \\ 01001011 \\ 11101001 \\ \hline \Delta 00110100 \end{array}$$

$$\begin{array}{r} 12-2 \\ 00001100 \\ 11111110 \\ \hline \Delta 00001010 \end{array}$$