

2's Complement Note (Signed)

Example $8 = 2^3$

7	0	1	1	1
6	0	1	1	0
		:		
1	0	0	0	1
0	0	0	0	0
-1	1	1	1	1
		:		
-8	1	0	0	0

complement \rightarrow binary

$$\begin{array}{r} 0111 \\ + 1000 \\ \hline 1111 = -1 \end{array}$$

97 -	$2^6 + 2^5 + 2^0$	$\rightarrow 001100001$
-142	$2^7 + 2^3 + 2^2 + 2^0 = 141$	\leftarrow subtracted 1
-45	128	
	$\frac{8}{136}$	

complement

$101110010 \rightarrow -142$

Now add \rightarrow

001100001	+	111010011	\rightarrow
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sign bit It is a negative number
 $-2^5 + 2^3 + 2^2 + 1 = -45$
 or complement and add 1

$$\begin{array}{r} -000101100 \\ -(2^5 + 2^3 + 2^2 + 1) \\ = -(32 + 8 + 4 + 1) \\ = -(45) \end{array}$$