• Converting negative numbers (still using a single 8-bit byte length):

```
-50: 50 = 0011 0010; 1's C. = 1100 1101; 2's C. = 1100 1110.

-127: 127 = 0111 1111; 1's C. = 1000 0000; 2's C. = 1000 0001.

-1: 1 = 0000 0001; 1's C. = 1111 1110; 2's C. = 1111 1111.
```

• But: Positive decimal numbers are converted simply to positive binary numbers as before (no 2's complement).

Example: +67 (using method of successive div.)  $\rightarrow 0100 \ 0011$ 

## **Two's Complement Binary to Decimal (2)**

 Binary 2's complement-to-decimal examples, negative numbers:

```
1111\ 1111 \rightarrow 0000\ 0000+1 = 0000\ 0001 = 1; \rightarrow - 1.
1010\ 0011 \rightarrow 0101\ 1100+1 = 0101\ 1101 = 93; \rightarrow - 93.
1000\ 1111 \rightarrow 0111\ 0000+1 = 0111\ 0001 = 113; \rightarrow - 113.
1000\ 0010 \rightarrow 0111\ 1101+1 = 0111\ 1110 = 126; \rightarrow - 126.
```

• But for a positive binary number:

```
0000 0001 → Not a negative number → 1.

0000 1111 → Not a negative number → 15.

0110 1100 → Not a negative number → 108.

0111 1111 → Not a negative number → 127.
```