

# 2/25/22 Quiz 4: *Dr. Miller*

a)  $\begin{array}{r} +5 \\ - +2 \\ \hline +3 \end{array} \Rightarrow 00010 \Rightarrow +11110$

$\begin{array}{r} 1100x \\ 00101 \end{array}$

$\begin{array}{r} 00011 \end{array}$

00011, no overflow!

$00001 \Rightarrow 11111$

b)  $\begin{array}{r} +9 \\ + -1 \\ \hline +7 \end{array} \Rightarrow 01000$

$\begin{array}{r} 11000x \\ 01000 \\ \hline 11111 \\ 00111 \end{array}$

00111, no overflow!

c)  $\begin{array}{r} -7 \\ - -3 \\ \hline -5 \end{array} \begin{array}{r} +7 \\ 00111 \Rightarrow 11001 \\ +2 \\ 00010 \Rightarrow 11110 \end{array} \Rightarrow \begin{array}{r} 100000x \\ 11001 \\ +00010 \\ \hline 11011 \end{array}$

11011, no overflow!

d)  $\begin{array}{r} -13 \\ + +14 \\ \hline -1 \end{array} \Rightarrow \begin{array}{r} +13 \\ 01111 \Rightarrow 10001 \\ +14 \\ 01110 \end{array} \Rightarrow \begin{array}{r} 100000x \\ 10001 \\ +01110 \\ \hline 11111 \end{array}$

11111, no overflow!

e)  $\begin{array}{r} -3 \\ + -12 \\ \hline -15 \end{array} \Rightarrow \begin{array}{r} +3 \\ 00011 \Rightarrow 11101 \\ +12 \\ 01100 \Rightarrow 10100 \end{array} \Rightarrow \begin{array}{r} 11100x \\ 11101 \\ +10100 \\ \hline 10001 \end{array}$

10001, no overflow!