

$$55_{10} - 18_{10}$$

$$\begin{array}{r}
 2 \overline{) 55} \\
 2 \overline{) 27} \ 1 \\
 2 \overline{) 13} \ 1 \\
 2 \overline{) 6} \ 1 \\
 2 \overline{) 3} \ 0 \\
 2 \overline{) 1} \ 1 \\
 \underline{0} \ 1 \\
 \end{array}$$

↑

$$= 110111_2$$

$$\begin{array}{r}
 2 \overline{) 18} \\
 2 \overline{) 9} \ 0 \\
 2 \overline{) 4} \ 1 \\
 2 \overline{) 2} \ 0 \\
 2 \overline{) 1} \ 0 \\
 \underline{0} \ 1 \\
 \end{array}$$

$$= 10010_2$$

$$55_{10} - 18_{10}$$

$$\begin{aligned}
 55_{10} &\rightarrow 00110111_2 \\
 18_{10} &\rightarrow 00010010_2
 \end{aligned}$$

Complement of 18

$$\begin{array}{r}
 00010010 \\
 + 11101101 \\
 \hline
 11101110
 \end{array}$$

Add 55 + (-18)

$$\begin{array}{r}
 \begin{array}{cccccccc}
 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
 & 0 & 0 & 1 & 1 & 0 & 1 & 1 & 1 \\
 + & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 0 \\
 \hline
 1 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1
 \end{array} \\
 \hline
 100100101
 \end{array}$$

Check (55 - 18 = 37)

$$\begin{array}{r}
 \begin{array}{cccccccc}
 & 32 & & & & & & & \\
 & 16 & 8 & 4 & 2 & 1 & & & \\
 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & \\
 \end{array} \\
 32 + 4 + 1 \\
 = 37
 \end{array}$$

✓

$$20_{10} - 36_{10}$$

①

$$20_{10} \rightarrow 10100 \rightarrow 00010100$$

$$36_{10} \rightarrow 100100 \rightarrow 00100100$$

②

Complement of 36

$$\begin{array}{r} 00100100 \\ 11011011 \\ + \phantom{00000000} \\ \hline 11011100 \end{array}$$

③

$$20 + (-36)$$

$$\begin{array}{r} 00010100 \\ + 11011100 \\ \hline 11100000 \end{array}$$

$$\text{Answer} = 1110000_2$$

Check  $11110000$   
 ↗  
 Means negative #

Find complement to check

$$\begin{array}{r} \text{Flip } 00001111 \\ + \phantom{00000000} \\ \hline 00010000 \end{array}$$

$16_{10}!$  ✓