

ACOL 215

(Sept. 9)

Q. $(135)_{10} = (?)_8$

A.

8	135	→ 7
8	16	→ 0
8	2	→ 2

 \Rightarrow

16
135
128
7

$\Rightarrow (135)_{10} = (207)_8$

Q.

Diminished Radix Complement
of $(135)_{10}$

$$(r^n - 1) - N$$

$$(1000 - 1) - 135$$

$$\begin{array}{r} 999 \\ - 135 \\ \hline 864 \end{array}$$

$$r = 10$$

$$n = 3$$

$$\begin{array}{r} \text{Radix} \\ \text{complement} \\ \hline (865)_{10} \end{array}$$

Q. Convert $(45.125)_{10}$ to binary.

101101.001

45.125

↓

$\div 2$

$$\frac{45}{2} = 22 \rightarrow \underline{1}$$

$$\frac{22}{2} = 11 \rightarrow \underline{0}$$

$$\frac{11}{2} = 5 \rightarrow \underline{1}$$

$$\frac{5}{2} = 2 \rightarrow \underline{1}$$

↓

$\times 2$

$$0.125 \times 2 = 0.250$$

$$0.250 \times 2 = 0.500 \checkmark$$

$$0.500 \times 2 = \underline{1}$$

Ans: 101101.001

$$\rightarrow \frac{2}{2} = \underline{1} \rightarrow 0, \frac{1}{2} = \boxed{1}$$

Q. Convert $(117.23)_{10}$ to octal.

$$\begin{array}{r} 8 \overline{) 117} \\ \underline{8 } 14 5 \\ 1 6 \end{array}$$

$$(117)_{10} = (165)_8$$

$$(165.1656)_8$$

$$0.23 \times 8 = 1.84$$

$$= 0.84$$

$$0.84 \times 8 = 6.72$$

$$0.72$$

$$0.72 \times 8 = 5.76$$

$$0.76$$

$$0.76 \times 8 =$$

$$6.08$$

$$0.08$$

①

⑥

⑤

⑥

Q. Binary equivalent of $(3.33)_{10}$
up to four places.

$$(11.0101)_2$$

$$(3.3125)_{10}$$

Q. Find 8's complement of $(2360)_8$

$$r = 8 \quad n = 4 \quad N = 2360$$

$$\begin{aligned} & r^n - N \\ &= 8^4 - 2360 \\ &= 4096 \\ &\quad - 2360 \\ &\hline &1736 \end{aligned}$$

$$\begin{array}{r} 7777 \\ - 2360 \\ \hline 5417 \\ + \quad \quad 1 \\ \hline (5420)_8 \end{array}$$

$$8^4 - 2360_8$$

$$4096_{10} \rightarrow (10000 - 1)_{10} \cdot (1111)_{10}$$

Q.

$$(51DE.C)_{\underline{16}} = (?)_{10}$$

$$= (20958.75)_{10}$$

9
10
11
12
13
14
15
A
B
C
D
E
F

Q. Subtract (unsigned binary numbers)

$$10101 - 11011$$

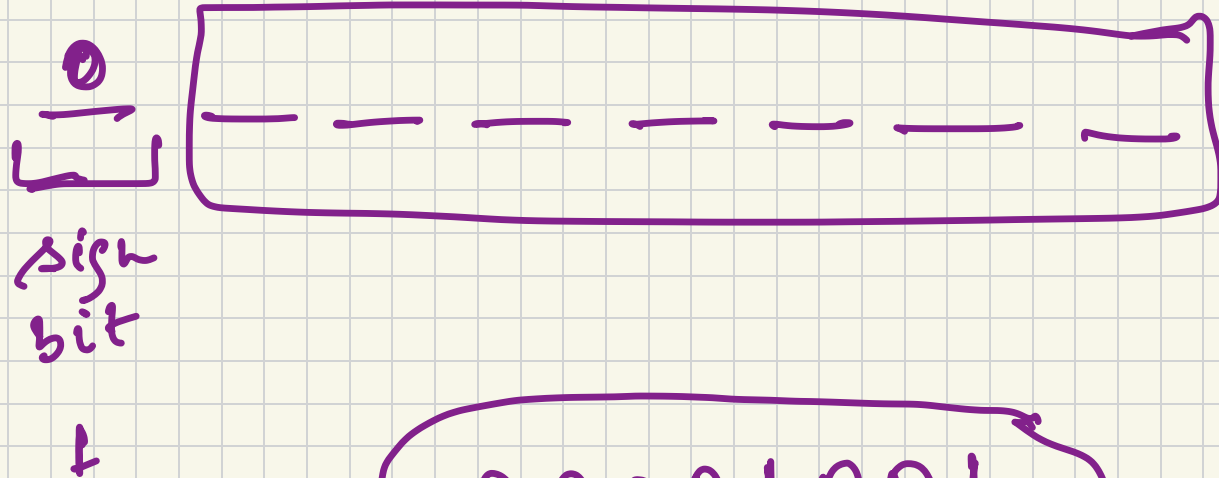
$$11011 \text{ 2's} \Rightarrow 00101$$

$$10101 + 00101 \Rightarrow 11010$$

\Downarrow
2's

$$- 00110$$

\rightarrow



00001001

10001001

Signed-magnitude representation

signed-1's complement representation 11110110

signed-2's complement " 11110111