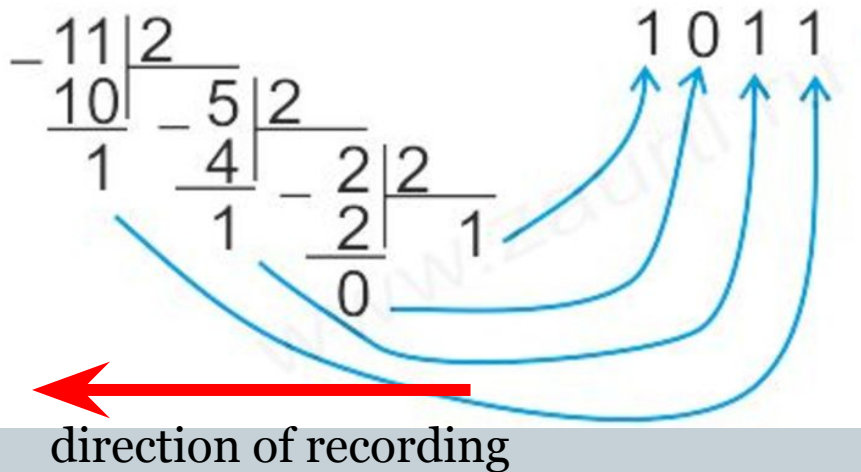




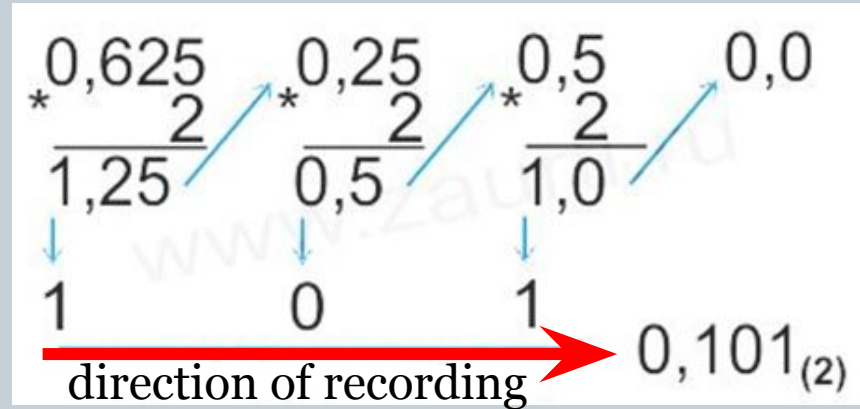
# Data representation in computer systems and its architecture and components

$$11,625_{(10)} = \dots\dots\dots(2)$$

First step:



Second step:

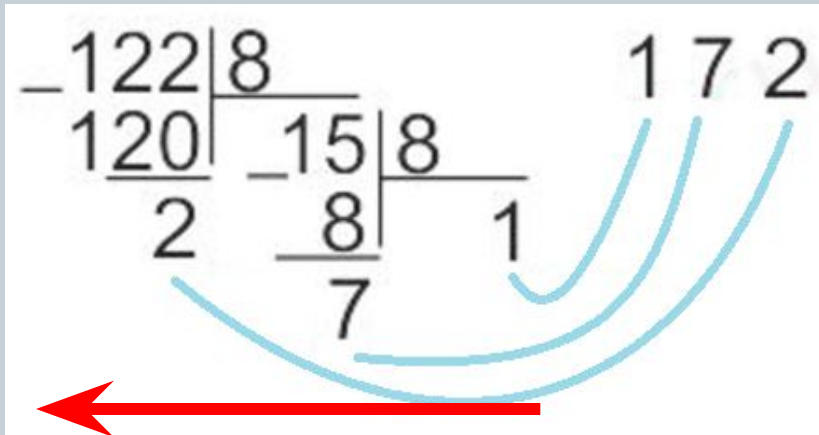


Answer:  $11,625_{(10)} = 1011,101_{(2)}$

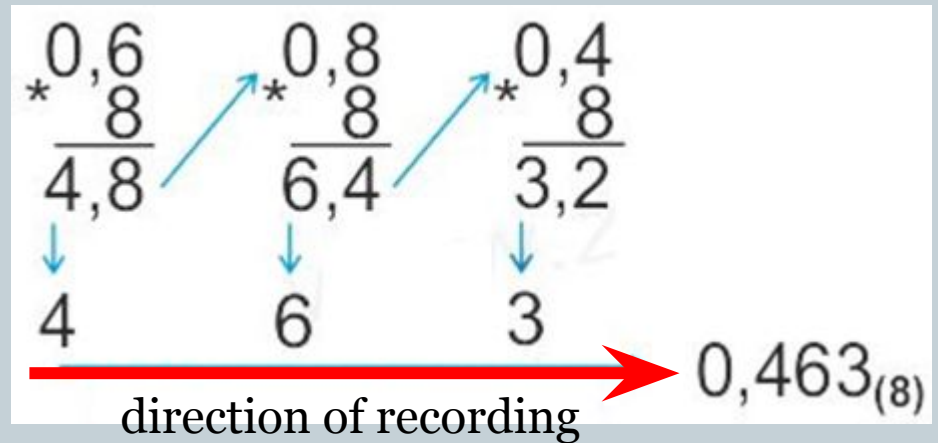
$$122,6_{(10)} = \dots\dots\dots(8)$$



First step:



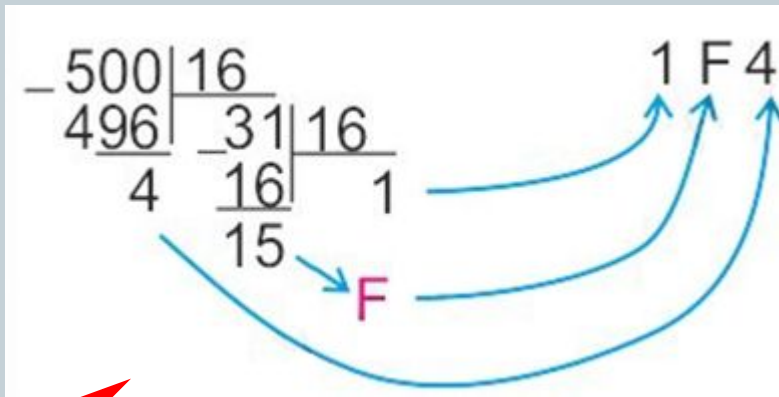
Second step:



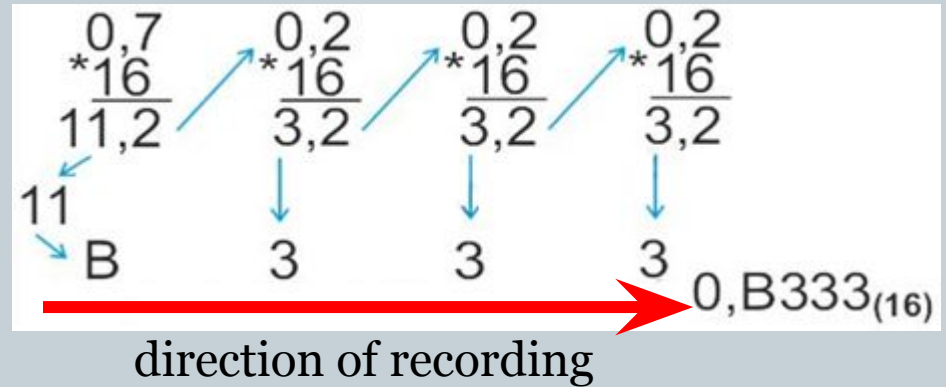
Answer:  $122,6_{(10)} = 172,463\dots_{(8)}$

$$500,7_{(10)} = \dots\dots\dots(16)$$

First step:



Second step:



Answer:  $500,7_{(10)} = 1F4,B333\dots_{(16)}$

## 1. Converting binary to decimal

$$\overset{2}{1} \overset{1}{0} \overset{0}{1}, \overset{-1}{1} \overset{-2}{1}_{(2)} \rightarrow_{(10)} = 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 + 1 \cdot 2^{-1} + 1 \cdot 2^{-2} = 5,75_{(10)}$$

Answer:  $101,11_{(2)} = 5,75_{(10)}$

## 2. Converting octal to decimal

$$\overset{1}{5} \overset{0}{7}, \overset{-1}{2} \overset{-2}{4}_{(8)} \rightarrow_{(10)} = 5 \cdot 8^1 + 7 \cdot 8^0 + 2 \cdot 8^{-1} + 4 \cdot 8^{-2} = 47,3125_{(10)}$$

Answer:  $57,24_{(8)} = 47,3125_{(10)}$

## 3. Converting hexadecimal to decimal

$$\overset{1}{7} \overset{0}{A}, \overset{-1}{8} \overset{-2}{4}_{(16)} \rightarrow_{(10)} = 7 \cdot 16^1 + 10 \cdot 16^0 + 8 \cdot 16^{-1} + 4 \cdot 16^{-2} = 122,515625_{(10)}$$

Answer:  $7A,84_{(16)} = 122,515625_{(10)}$

# Addition of two numbers in octal

$$\begin{array}{r} \phantom{+} \phantom{6} \phantom{3} \phantom{5} \phantom{4}_8 \\ + \phantom{6} \phantom{3} \phantom{5} \phantom{4}_8 \\ \hline 7 \phantom{2} \phantom{6} \phantom{1}_8 \\ \hline \end{array}$$

4+5=9=1\*8+1

5+0+1=6

3+7=10=1\*8+2

6+1=7

$$\begin{array}{r} \phantom{+} \phantom{2} \phantom{1} \phantom{5}, \phantom{4} \\ + \phantom{2} \phantom{1} \phantom{5}, \phantom{4} \\ \hline 3 \phantom{1} \phantom{1}, \phantom{2} \\ \hline \end{array}$$

4+6=10=8+2

5+3+1=9=8+1

1+7+1=9=8+1

2+1=3

Answer:  $6354_{(8)} + 705_{(8)} = 7261_{(8)}$     Answer:  $215,4_{(8)} + 73,6_{(8)} = 311,2_{(8)}$

# Addition of two numbers in hexadecimal

$$\begin{array}{r} 1 \\ 1C52_{16} \\ + 891_{16} \\ \hline 24E3_{16} \end{array}$$

$1+2=3$

$5+9=14=E_{16}$

$C_{16}+8=12+8=20=1*16+4$

$1+1=2$

Answer:  $1C52_{(16)} + 891_{(16)} = 24E3_{(16)}$

$$\begin{array}{r} 11 \\ 8D,8 \\ + 3B,C \\ \hline C9,4 \end{array}$$

$8+12=20=16+4$

$13+11+1=25=16+9$

$8+3+1=12=C_{16}$

Answer:  $8D,8_{(16)} + 3B,C_{(16)} = C9,4_{(16)}$