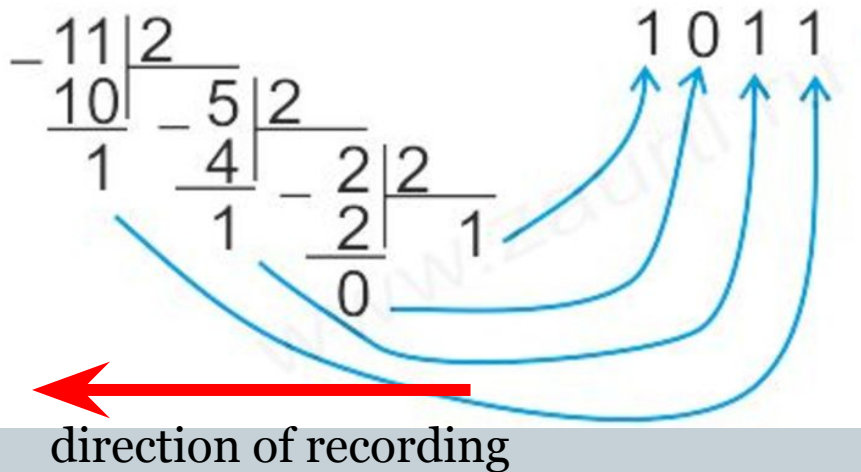




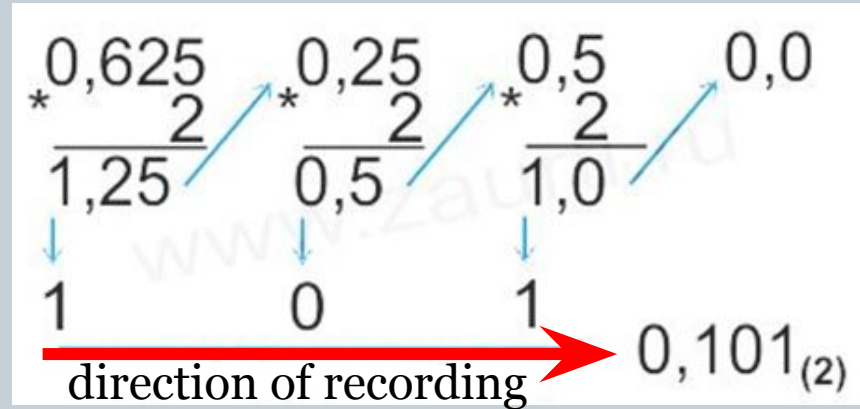
# Data representation in computer systems and its architecture and components

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

First step:



Second step:

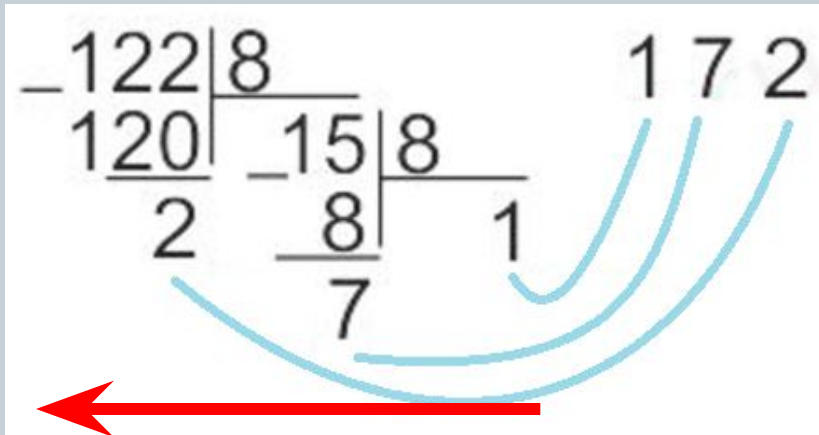


Answer:  $11,625_{(10)} = 1011,101_{(2)}$

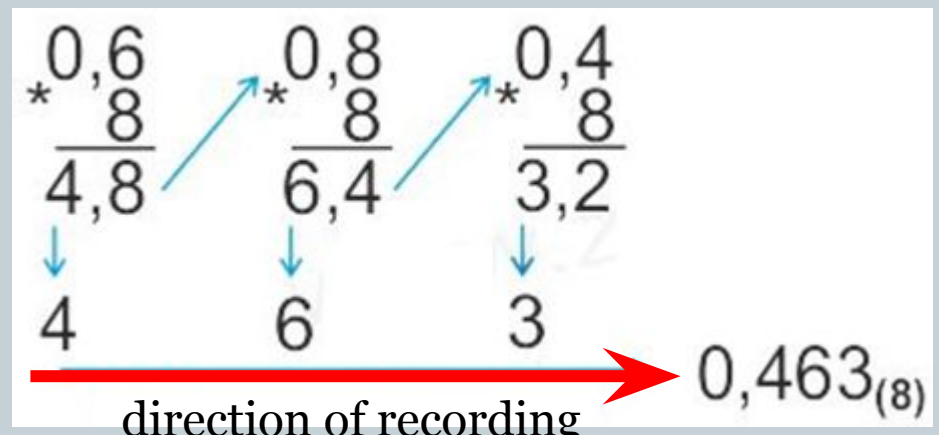
$$122,6_{(10)} = \dots\dots\dots(8)$$



First step:



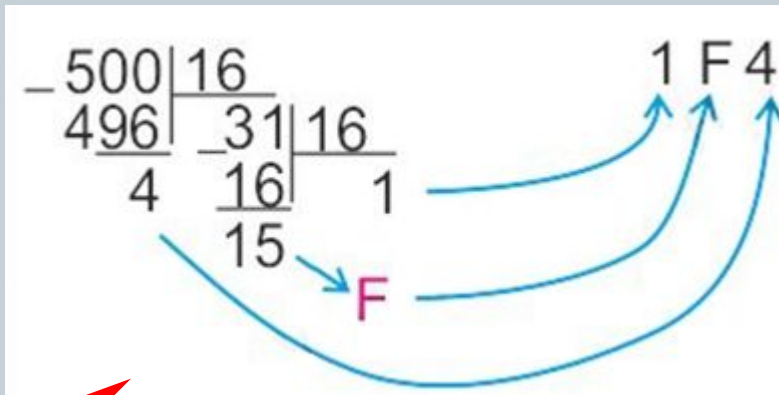
Second step:



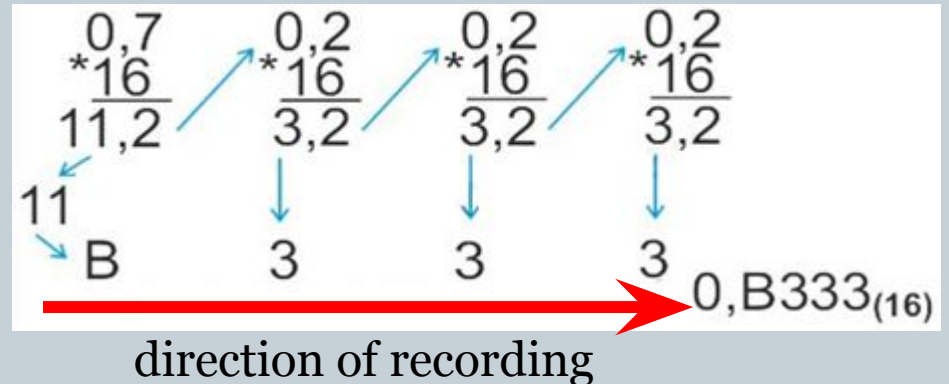
Answer:  $122,6_{(10)} = 172,463\dots_{(8)}$

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

First step:



Second step:



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

## 1. Converting binary to decimal

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

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

## 2. Converting octal to decimal

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

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

## 3. Converting hexadecimal to decimal

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

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

# Addition of two numbers in octal

$$\begin{array}{r}
 \phantom{+} \overset{1}{6} \overset{1}{3} 5 4_8 \\
 + \phantom{+} 7 0 5_8 \\
 \hline
 7 \phantom{0} 2 \phantom{0} 6 \phantom{0} 1_8
 \end{array}$$

$4+5=9=1*8+1$   
 $5+0+1=6$   
 $3+7=10=1*8+2$   
 $6+1=7$

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

$4+6=10=8+2$   
 $5+3+1=9=8+1$   
 $1+7+1=9=8+1$   
 $2+1=3$

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