

Decimal
Ten's place
(10)

0
1
2
3
4
5
6
7
8
9
10
11
12
13



(10⁰)
One's place

$$\begin{array}{r} 13 \\ - \\ \hline 1 \times 10 + 3 \times 1 \end{array}$$

$$\begin{array}{r} 1101_2 \\ = 1 \times 2^3 \\ + 1 \times 2^2 \\ + 0 \times 2^1 \\ + 1 \times 2^0 \end{array}$$

Binary

2^4 | 2^3 | 2^2 | 2^1 | 2^0

0
1
10
11
100
101
110
111
1000
1001
1010
1011
1100
1101

Decimal to Binary

$$2 \overline{) 6} \quad R: 1$$

$$2 \overline{) 3} \quad R: 0$$

$$2 \overline{) 1} \quad R: 1$$

$$2 \overline{) 1} \quad R: 1$$

1

01

101

1101

Decimal (base 10)

$$(.125)_{10} = \frac{1}{10^1} + \frac{2}{10^2} + \frac{5}{10^3}$$

$$= 1 \times 10^{-1} + 2 \times 10^{-2} + 5 \times 10^{-3}$$

$$(.001)_2 = 0 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3}$$

$$= \left(0 + 0 + \frac{1}{8} \right)_{10} = .125$$

$$(125)_{10} = \quad ?_2$$

$$\bullet 125 \times 2 = \boxed{0} \cdot 250$$

$$\bullet 250 \times 2 = \boxed{0} \cdot 500$$

$$\bullet 500 \times 2 = \boxed{1} \cdot 1000$$

Least

0

0

1

Most

$$\therefore (125)_{10} = (1001)_{2}$$

$$(0.2)_{10} = (?)_2$$

$$0.2 \times 2 = \boxed{0}.4$$

$$0.4 \times 2 = \boxed{0}.8$$

$$0.8 \times 2 = \boxed{1}.6$$

$$.6 \times 2 = \boxed{1}.2$$

$$.2 \times 2 = \boxed{0}.4$$

0.0

0.00

0.001

0.0011

0.0011 0011 0011

...