

Base 10

Base 2

Base 8

Base 16

$$127 = \begin{array}{r} \begin{array}{cc} 1 & 7 & 7 \\ \hline \end{array} \\ \begin{array}{cccccccc} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ \hline \end{array} \\ \begin{array}{cc} 7 & F \\ \hline \end{array} \end{array} = \begin{array}{c} 177 \\ \hline \end{array} = 7F$$

Convert from chart
Every 3 digits from base 2
(111=7)

Convert from chart
Every 4 digits from base 2
(1111=F)

$$21 = \begin{array}{r} \begin{array}{cc} 2 & 5 \\ \hline \end{array} \\ \begin{array}{cccc} 1 & 0 & 1 & 0 & 1 \\ \hline \end{array} \\ \begin{array}{cc} 1 & 5 \\ \hline \end{array} \end{array} = \begin{array}{c} 25 \\ \hline \end{array} = 15$$

Convert from chart
Every 3 digits from base 2
(101=5)

Convert from chart
Every 4 digits from base 2
(1010=A)

$$57 = \begin{array}{r} \begin{array}{cc} 7 & 1 \\ \hline \end{array} \\ \begin{array}{cccc} 1 & 1 & 1 & 0 & 0 & 1 \\ \hline \end{array} \\ \begin{array}{cc} 3 & 9 \\ \hline \end{array} \end{array} = \begin{array}{c} 71 \\ \hline \end{array} = 39$$

$7 \times 8^1 = 56$
 $1 \times 8^0 = 1$

$$171 = \begin{array}{r} \begin{array}{ccc} 2 & 5 & 3 \\ \hline \end{array} \\ \begin{array}{ccccccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 1 \\ \hline \end{array} \\ \begin{array}{cc} 4 & B \\ \hline \end{array} \end{array} = \begin{array}{c} 253 \\ \hline \end{array} = AB$$

Convert from base 16 \rightarrow 2
 then convert base 2 \rightarrow 8

$$\begin{aligned}
 127/2 &= 63.5 = 1 \\
 63/2 &= 31.5 = 1 \\
 31/2 &= 15.5 = 1 \\
 15/2 &= 7.5 = 1 \\
 7/2 &= 3.5 = 1 \\
 3/2 &= 1.5 = 1 \\
 1/2 &= .5 = 1
 \end{aligned}$$

$$127_{10} = 1111111_2$$

$$\begin{aligned}
 10101_2 &= \\
 1 \times 2^4 &= 16 \\
 0 \times 2^3 &= 0 \\
 1 \times 2^2 &= 4 \\
 0 \times 2^1 &= 0 \\
 1 \times 2^0 &= 1 \\
 \hline
 &21_{10}
 \end{aligned}$$

$$7 \times 8^1 = 56$$

$$1 \times 8^0 = 1$$

$$\hline 57_{10}$$

$$57/2 = 28.5 = 1$$

$$28/2 = 14 = 0$$

$$14/2 = 7 = 0$$

$$7/2 = 3.5 = 1$$

$$3/2 = 1.5 = 1$$

$$1/2 = .5 = 1$$

$$111001$$

$$1 \times 2^7 = 128$$

$$0 \times 2^6 = 0$$

$$1 \times 2^5 = 32$$

$$0 \times 2^4 = 0$$

$$1 \times 2^3 = 8$$

$$0 \times 2^2 = 0$$

$$1 \times 2^1 = 2$$

$$1 \times 2^0 = 1$$

$$\hline 171$$