

Taller Práctico - Sistemas Numéricos.

Decimal	Binario	Octal	Hexadecimal
10	1010.	12.	A
17	10001.	21.	B
34	100010.	42.	22
56	111000	70.	38
90	1011010.	132.	5A

CONVIERTE LOS SIGUIENTES NÚMEROS:

Binario a Decimal.

$$\begin{array}{r} 101010. \\ \frac{1}{32} + \frac{1}{8} + \frac{1}{2} = 42 // \end{array}$$

$$\begin{array}{r} 11011 \\ \frac{1}{16} + \frac{1}{8} + \frac{1}{2} + 1 = 27 // \end{array}$$

$$\begin{array}{r} 11100 \\ \frac{1}{16} + \frac{1}{8} + \frac{1}{4} = 28 // \end{array}$$

$$\begin{array}{r} 1000001 \\ \frac{1}{64} + \frac{1}{1} = 65 // \end{array}$$

Decimal a Binario.

$$\begin{array}{r} 19 \\ 1 \quad 9 \quad | \quad 2 \\ \quad 1 \quad 4 \quad | \quad 2 \\ \quad \quad 0 \quad 2 \quad | \quad 2 \\ \quad \quad \quad 1 \quad 1 \end{array}$$

$$19 = 11011.$$

$$\begin{array}{r} 42 \\ 0 \quad 21 \quad | \quad 2 \\ \quad 1 \quad 10 \quad | \quad 2 \\ \quad \quad 0 \quad 5 \quad | \quad 2 \\ \quad \quad \quad 1 \quad 2 \quad | \quad 2 \\ \quad \quad \quad \quad 0 \quad 1 \end{array}$$

$$42 = 101010.$$

$$\begin{array}{r}
 101 \quad | \quad 2 \\
 1 \quad | \quad 30 \quad | \quad 2 \\
 \quad \quad 0 \quad 25 \quad | \quad 2 \\
 \quad \quad \quad 1 \quad 12 \quad | \quad 3 \\
 \quad \quad \quad \quad 0 \quad 6 \quad | \quad 3 \\
 \quad \quad \quad \quad 0 \quad 2 \quad | \quad 2 \\
 \quad \quad \quad \quad 0 \quad 1
 \end{array}$$

$$101 = 1000101.$$

$$\begin{array}{r}
 256 \quad | \quad 2 \\
 0 \quad 128 \quad | \quad 2 \\
 \quad 0 \quad 64 \quad | \quad 2 \\
 \quad \quad 0 \quad 32 \quad | \quad 2 \\
 \quad \quad \quad 0 \quad 16 \quad | \quad 2 \\
 \quad \quad \quad \quad 0 \quad 8 \quad | \quad 2 \\
 \quad \quad \quad \quad 0 \quad 4 \quad | \quad 2 \\
 \quad \quad \quad \quad 0 \quad 2 \quad | \quad 2 \\
 \quad \quad \quad \quad 0 \quad 1
 \end{array}$$

$$256 = 100000000.$$

Octal a Decimal.

1 4 5 5

$$(1 \cdot 8^0) + (5 \cdot 8^1) = 37$$

6 7

$$(6 \cdot 8^0) + (7 \cdot 8^1) = 55$$

1 5 7

$$(1 \cdot 8^2) + (5 \cdot 8^1) + (7 \cdot 8^0) = 111$$

3 4 1

$$(3 \cdot 8^2) + (4 \cdot 8^1) + (1 \cdot 8^0) = 225$$

Decimal a Octal.

$$\begin{array}{r}
 23 \quad | \quad 8 \\
 2 \quad | \quad 2
 \end{array}$$

$$23 = 27$$

$$\begin{array}{r}
 89 \quad | \quad 8 \\
 1 \quad | \quad 11 \quad | \quad 8 \\
 \quad \quad \quad 3 \quad | \quad 1
 \end{array}$$

$$89 = 131$$

$$\begin{array}{r}
 512 \quad | \quad 8 \\
 0 \quad | \quad 64 \quad | \quad 8 \\
 \quad 0 \quad 8 \quad | \quad 8 \\
 \quad \quad 0 \quad 1
 \end{array}$$

$$512 = 1000$$

$$999 \quad | \quad 8$$

$$999 = 1747$$

$$\begin{array}{r}
 7 \quad | \quad 124 \quad | \quad 8 \\
 2 \quad | \quad 15 \quad | \quad 8 \\
 \quad \quad 7 \quad | \quad 1
 \end{array}$$

Hexadecimal a Decimal.

1 B.

$$(1 \cdot 16^0) + (11 \cdot 16^0) = 27 //$$

3 E

$$(3 \cdot 16^0) + (14 \cdot 16^0) = 62 //$$

7 D.

$$(7 \cdot 16^0) + (13 \cdot 16^0) = 125 //$$

F 1.

$$(15 \cdot 16^0) + (1 \cdot 16^0) = 241 //$$

Decimal a Hexadecimal.

$$\begin{array}{r} 99 \\ 3 \quad 6. \\ 99 \quad | \quad 16. \\ 33 \quad | \quad 16 \\ 1. \quad 2 \end{array} \quad 99 = 63 //$$

$$\begin{array}{r} 250 \\ A. \quad F \\ 250 \quad | \quad 16 \\ 61 \quad | \quad 16 \\ 0 \quad 4 \end{array} \quad 250 = FA //$$

$$\begin{array}{r} 543 \\ F \quad 33 \quad | \quad 16 \\ 33 \quad | \quad 16 \\ 1. \quad 2 \end{array} \quad 543 = 21F //$$

$$\begin{array}{r} 1024 \\ 0 \quad 61 \quad | \quad 16 \\ 61 \quad | \quad 16 \\ 0 \quad 4 \end{array} \quad 1024 = 400$$

CONVERSIÓN

1001.101 → Decimal.

$$\begin{array}{r} 1 \quad 0 \quad 0 \quad 1. \quad 1 \quad 0 \quad 1 \\ \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \\ 1 \quad 0 \quad 0 \quad 1. \quad 1 \quad 0 \quad 1 \\ 1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1 \end{array} = 2+1+1+1+1+1+1 = 11.5 //$$

111111 → Hexadecimal

$$\begin{array}{r} 8. \quad H \quad 2 \quad 1. \quad 8 \quad A \quad 2 \quad 1. \\ 1 \quad 0 \quad 0 \quad 1 \quad 1. \quad 1 \quad 1 \quad 1. \\ 1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1 \\ 2+1 \quad 8+4+2+1 \end{array}$$

3. 15

3F //

5A → Binario.

$$\begin{array}{r} 5 \\ 8 \quad 4 \quad 2 \quad 1 \quad 8 \quad 4 \quad 2 \quad 1 \\ \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \\ 0 \quad 1 \quad 0 \quad 1 \quad 1 \quad 0 \quad 1 \quad 0 \\ 1011010 // \end{array}$$

7D → Octal

$$\begin{array}{r} 7 \\ 8 \quad 4 \quad 2 \quad 1 \quad 8 \quad 4 \quad 2 \quad 1 \\ \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \\ 0 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 0 \quad 1 \\ 001 \quad 111 \quad 801 \\ 1 \quad 1+2+1 \quad 1+1 \end{array}$$

1175

61 → Octal → Binario.

$$\begin{array}{r} 6 \\ \text{H} \\ 1121 \quad 1121 \\ 110 \cdot \quad 100 \end{array}$$

110100 //

173 → Octal → Hexa

$$\begin{array}{r} 1 \quad 7 \quad 3 \\ \text{H} \quad \text{E} \quad \text{H} \\ 1121 \quad 1121 \quad 1121 \\ 001111 \quad 011 \end{array}$$

0000 0111 1011

H + 2 + 1 E + 2 + 1

7 B //

SUMA Y RESTA.

Binario.

$$\begin{array}{r} 1111 \\ 1101 \\ + 1011 \\ \hline 11000 \end{array}$$

$$\begin{array}{r} 1111 \\ 101010 \\ + 110011 \\ \hline 1011101 \end{array}$$

$$\begin{array}{r} 111001 \\ - 001010 \\ \hline 101111 \end{array}$$

$$\begin{array}{r} 11 \\ 1001011 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 0010001 \\ - 0111010 \\ \hline \end{array}$$

Octal.

$$\begin{array}{r} 1 \\ 13 \\ + 65 \\ \hline 130 // \end{array}$$

$$\begin{array}{r} 8 \\ - 8 \times 1 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 11 \\ - 8 \times 1 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 11 \\ 127 \\ + 071 \\ \hline 220 // \end{array}$$

$$\begin{array}{r} 8 \\ - 8 \times 1 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 10 \\ - 8 \times 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} -1+8 \\ 251 \\ - 136 \\ \hline 116 // \end{array}$$

$$\begin{array}{r} 375 \\ - 200 \\ \hline 175 // \end{array}$$

Hexadecimal.

$$\begin{array}{r}
 1 \\
 2 \quad B \\
 + \quad 1 \quad 9 \\
 \hline
 4 \quad 4 //
 \end{array}$$

$$\begin{array}{r}
 20 \\
 - 16 \times 1 \\
 \hline
 11
 \end{array}$$

$$\begin{array}{r}
 1 \\
 A \quad 7 \\
 + \quad 5 \quad D \\
 \hline
 1 \quad 0 \quad 4 //
 \end{array}$$

$$\begin{array}{r}
 20 \\
 - 16 \times 1 \\
 \hline
 4
 \end{array}$$

$$\begin{array}{r}
 9 \quad E \\
 - 3 \quad B \\
 \hline
 6 \quad 3 //
 \end{array}$$

$$\begin{array}{r}
 F \quad C \\
 - 7 \quad 2 \\
 \hline
 8 \quad A //
 \end{array}$$

Multiplicación y División.

Binario.

$$\begin{array}{r}
 1 \quad 0 \quad 1 \quad 1 \\
 \times 1 \quad 1 \quad 0 \\
 \hline
 0 \quad 0 \quad 0 \quad 0 \\
 1 \quad 0 \quad 1 \quad 1 \\
 1 \quad 0 \quad 1 \quad 1 \\
 \hline
 1 \quad 0 \quad 0 \quad 0 \quad 0 \quad 1 \quad 0 //
 \end{array}$$

$$\begin{array}{r}
 1 \quad 1 \quad 1 \quad 1 \\
 \times 1 \quad 0 \quad 1 \\
 \hline
 0 \quad 0 \quad 0 \quad 0 \\
 1 \quad 1 \quad 1 \quad 1 \\
 \hline
 1 \quad 0 \quad 0 \quad 1 \quad 0 \quad 1 \quad 1 //
 \end{array}$$

$$\begin{array}{r}
 1 \quad 1 \quad 0 \quad 1 \quad 0 \quad 0 \\
 - 1 \quad 0 \\
 \hline
 0 \quad 1 \quad 0 \\
 - 1 \quad 0 \\
 \hline
 0 \quad 0 \quad 1 \quad 0 \\
 - 1 \quad 0 \\
 \hline
 0 \quad 0 \quad 0
 \end{array}
 \quad | \quad
 \begin{array}{r}
 1 \quad 0 \cdot \\
 1 \quad 1 \quad 0 \quad 1 \quad 0 \\
 \hline
 1 \quad 1 \quad 0 \quad 1 \quad 0 //
 \end{array}$$

$$\begin{array}{r}
 1 \quad 0 \quad 1 \quad 1 \quad 1 \quad 0 \quad 1 \\
 - 1 \quad 0 \quad 1 \\
 \hline
 0 \quad 0 \quad 0 \quad 1 \quad 1 \quad 0 \\
 - 1 \quad 0 \quad 1 \\
 \hline
 0 \quad 0 \quad 1 \quad 1 \quad 1
 \end{array}
 \quad | \quad
 \begin{array}{r}
 1 \quad 0 \cdot \\
 1 \quad 0 \quad 0 \quad 1 \quad 0 \\
 \hline
 1 \quad 0 \quad 0 \quad 1 \quad 0 //
 \end{array}$$

Octal.

$$\begin{array}{r}
 2 \quad 3 \\
 \times 1 \quad 2 \\
 \hline
 4 \quad 6 \\
 2 \quad 3 \\
 \hline
 2 \quad 7 \quad 6 //
 \end{array}$$

$$\begin{array}{r}
 7 \quad 4 \\
 \times 5 \\
 \hline
 4 \quad 5 //
 \end{array}$$

$$\begin{array}{r}
 20 \quad 35 \\
 - 8 \times 2 \quad - 8 \times 4 \\
 \hline
 4 \quad 3
 \end{array}$$

$$\begin{array}{r}
 156 \\
 -14 \\
 \hline
 016 \\
 -11 \\
 \hline
 02
 \end{array}$$

$$\begin{array}{r}
 10 \\
 \times 3 \\
 \hline
 14
 \end{array}$$

$$\begin{array}{r}
 325 \\
 -22 \\
 \hline
 105 \\
 -77 \\
 \hline
 006
 \end{array}$$

Hexadecimal.

$$\begin{array}{r}
 1A \\
 2F \\
 \times 3B \\
 \hline
 205 \\
 8D \\
 \hline
 ADF //
 \end{array}$$

$$\begin{array}{r}
 3 \\
 A9 \\
 \times 17 \\
 \hline
 49F \\
 A9 \\
 \hline
 F2F //
 \end{array}$$

$$\begin{array}{r}
 165 \\
 -16 \times 10 \\
 \hline
 5
 \end{array}$$

$$\begin{array}{r}
 32 \\
 -16 \times 2 \\
 \hline
 0
 \end{array}$$

$$\begin{array}{r}
 45 \\
 -16 \times 2 \\
 \hline
 D
 \end{array}$$

$$\begin{array}{r}
 63 \\
 -16 \times 3 \\
 \hline
 F
 \end{array}$$

$$\begin{array}{r}
 73 \\
 -16 \times 4 \\
 \hline
 9
 \end{array}$$

$$\begin{array}{r}
 18 \\
 -16 \\
 \hline
 3
 \end{array}$$

$$\begin{array}{r}
 F2 \\
 -C \\
 \hline
 32 \\
 -30 \\
 \hline
 C2
 \end{array}$$

$$\begin{array}{r}
 6 \\
 \times 28 \\
 \hline
 4
 \end{array}$$

$$\begin{array}{r}
 B4 \\
 -A \\
 \hline
 14 \\
 -14 \\
 \hline
 0
 \end{array}$$