

Decimal

A decimal numeral system (used in common life) that uses a notation in which each number is expressed in base 10 by using one of the first nine integers or 0 in each place and letting each place value be a power of 10.

Example: $2945 =$
 $= 2 \times 10^3 + 9 \times 10^2 + 4 \times 10^1 + 5 \times 10^0 =$
 $= 2 \times 1000 + 9 \times 100 + 4 \times 10 + 5 \times 1 =$
 $= 2000 + 900 + 40 + 5$

Hexadecimal:

In mathematics and computing, hexadecimal (also base 16, or hex) is a positional numeral system with a radix, or base, of 16. It uses sixteen distinct symbols, most often the symbols "0"–"9" to represent values zero to nine, and "A"–"F" (or alternatively "a"–"f") to represent values ten to fifteen.

Example: $F3A_{(\text{hexadecimal})} =$
 $= 15 \times 16^2 + 3 \times 16^1 + 10 \times 16^0 =$ (*note: F=15, A=10 in decimal)
 $= 15 \times 256 + 3 \times 16 + 10 \times 1 =$
 $= 3898_{(\text{decimal})}$

Binary

A binary code represents text, computer processor instructions, or any other data using a two-symbol system. The two-symbol system used is often "0" and "1" from the binary number system. The binary code assigns a pattern of binary digits, also known as bits, to each character, instruction, etc.

Example: $1101_{(\text{bin})} =$
 $= 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 =$
 $= 1 \times 8 + 1 \times 4 + 0 \times 2 + 1 \times 1 =$
 $= 8 + 4 + 0 + 1 = 13_{(\text{decimal})}$

Help for universal numeral system converter on matek.com (in Hungarian):

Számrendszerek átváltása

Átalakítandó szám: **F0** *<= Number to convert*

Számrendszerek típusai: **16** => **2** *From => To numeric system (in this example from Hexadecimal (16) to binary (2))*

Átvált **11110000(2) = 240(10)** *Converted number(s)*

Átváltási folyamat: *Conversion process*

(16)₁₆ => (10)₁₀
 $(F)_{16} \cdot 16^1 + 0 \cdot 16^0 = 240 = 240_{(10)}$

(10)₁₀ => (2)₂
240₍₁₀₎ osztása 2-al(él) és a maradék:

240	: 2	= 120	marad: 0	0	↑
120	: 2	= 60	marad: 0	0	↑
60	: 2	= 30	marad: 0	0	↑
30	: 2	= 15	marad: 0	0	↑
15	: 2	= 7	marad: 1	1	↑
7	: 2	= 3	marad: 1	1	↑
3	: 2	= 1	marad: 1	1	↑
1	: 2	= 0	marad: 1	1	↑
				0	

Decimal	Hexadecimal	Octal	Binary
0	0	0	0
1	1	1	1
2	2	2	10
3	3	3	11
4	4	4	100
5	5	5	101
6	6	6	110
7	7	7	111
8	8	10	1000
9	9	11	1001
10	A	12	1010
11	B	13	1011
12	C	14	1100
13	D	15	1101
14	E	16	1110
15	F	17	1111
16	10	20	10000
17	11	21	10001
18	12	22	10010
19	13	23	10011
20	14	24	10100
21	15	25	10101
22	16	26	10110
23	17	27	10111
24	18	30	11000
25	19	31	11001
26	1A	32	11010
27	1B	33	11011
28	1C	34	11100
29	1D	35	11101
30	1E	36	11110
31	1F	37	11111
32	20	40	100000
33	21	41	100001
34	22	42	100010
35	23	43	100011
36	24	44	100100
37	25	45	100101
38	26	46	100110
39	27	47	100111
40	28	50	101000
41	29	51	101001
42	2A	52	101010
43	2B	53	101011
44	2C	54	101100
45	2D	55	101101
46	2E	56	101110
47	2F	57	101111
48	30	60	110000
49	31	61	110001
50	32	62	110010

Decimal	Hexadecimal	Octal	Binary
51	33	63	110011
52	34	64	110100
53	35	65	110101
54	36	66	110110
55	37	67	110111
56	38	70	111000
57	39	71	111001
58	3A	72	111010
59	3B	73	111011
60	3C	74	111100
61	3D	75	111101
62	3E	76	111110
63	3F	77	111111
64	40	100	1000000
65	41	101	1000001
66	42	102	1000010
67	43	103	1000011
68	44	104	1000100
69	45	105	1000101
70	46	106	1000110
71	47	107	1000111
72	48	110	1001000
73	49	111	1001001
74	4A	112	1001010
75	4B	113	1001011
76	4C	114	1001100
77	4D	115	1001101
78	4E	116	1001110
79	4F	117	1001111
80	50	120	1010000
81	51	121	1010001
82	52	122	1010010
83	53	123	1010011
84	54	124	1010100
85	55	125	1010101
86	56	126	1010110
87	57	127	1010111
88	58	130	1011000
89	59	131	1011001
90	5A	132	1011010
91	5B	133	1011011
92	5C	134	1011100
93	5D	135	1011101
94	5E	136	1011110
95	5F	137	1011111
96	60	140	1100000
97	61	141	1100001
98	62	142	1100010
99	63	143	1100011
100	64	144	1100100
101	65	145	1100101