



Base Conversion

Conversion between bases six and ten

On the following pages you'll find the conversion tables between bases six and ten, and between bases ten and six; the left page has the integer conversions, and the right page, the fractions;

To convert from the sezimal base (base six) to decimal (base ten), first you separate the number being converted into an integer part (to the left of the sezimal point) and an fractional part (to the right of the sezimal point, just named sezimal part):

$$12,3451.012345$$

After that, you look for each digit of the integer part, from the highest to the lowest, on the conversion tables of the integers, padding with zeroes to the right up to the sezimal point, and sum all the conversions:

+ 10,0000	+ 7,776	
+ 2,0000	+ 2,592	
+ 3000	+ 648	
+ 400	+ 144	
+ 51	+ 31	(the conversion table has all two digit combinations from 00 to 55)
<hr/>	<hr/>	
12,3451	11,191	the sum of each digit's conversion is the conversion of the entire number

For the sezimal (fractional) part, you just do the same, but padding with zeroes to the left up to the sezimal point, and looking for the correspondence on the fractions' tables:

+ 0.000000	+ 0.000000
+ 0.010000	+ 0.027778
+ 0.002000	+ 0.009259
+ 0.000300	+ 0.002315
+ 0.000040	+ 0.000514
+ 0.000005	+ 0.000107
<hr/>	
0.012345	0.039973

At least, the final converted value is 11,191.039973 on the decimal base;

Conversion from the decimal base to the sezimal one works following the exact same logic;

Sez.	Dec.	Sezimal	Decimal	Sezimal	Decimal
0	0				
1	1	100	36	10,0000,0000	10,077,696
2	2	200	72	20,0000,0000	20,155,392
3	3	300	108	30,0000,0000	30,233,088
4	4	400	144	40,0000,0000	40,310,784
5	5	500	180	50,0000,0000	50,388,480
10	6	1000	216	100,0000,0000	60,466,176
11	7	2000	432	200,0000,0000	120,932,352
12	8	3000	648	300,0000,0000	181,398,528
13	9	4000	864	400,0000,0000	241,864,704
14	10	5000	1	500,0000,0000	302,330,880
15	11	1,0000	1	1000,0000,0000	362,797,056
20	12	2,0000	3	2000,0000,0000	725,594,112
21	13	3,0000	4	3000,0000,0000	1,088,391,168
22	14	4,0000	5	4000,0000,0000	1,451,188,224
23	15	5,0000	6	5000,0000,0000	1,813,985,280
24	16	10,0000	8	1,0000,0000,0000	2,176,782,336
25	17	20,0000	16	2,0000,0000,0000	4,353,564,672
30	18	30,0000	23	3,0000,0000,0000	6,530,347,008
31	19	40,0000	31	4,0000,0000,0000	8,707,129,344
32	20	50,0000	39	5,0000,0000,0000	10,883,911,680
33	21	100,0000	47	10,0000,0000,0000	13,060,694,016
34	22	200,0000	93	20,0000,0000,0000	26,121,388,032
35	23	300,0000	140	30,0000,0000,0000	39,182,082,048
40	24	400,0000	187	40,0000,0000,0000	52,242,776,064
41	25	500,0000	233	50,0000,0000,0000	65,303,470,080
42	26	1000,0000	280	100,0000,0000,0000	78,364,164,096
43	27	2000,0000	560	200,0000,0000,0000	156,728,328,192
44	28	3000,0000	840	300,0000,0000,0000	235,092,492,288
45	29	4000,0000	1,119,744	400,0000,0000,0000	313,456,656,384
50	30	5000,0000	1,399,680	500,0000,0000,0000	391,820,820,480
51	31	1,0000,0000	1,679,616	1000,0000,0000,0000	470,184,984,576
52	32	2,0000,0000	3,359,232	2000,0000,0000,0000	940,369,969,152
53	33	3,0000,0000	5,038,848	3000,0000,0000,0000	1,410,554,953,728
54	34	4,0000,0000	6,718,464	4000,0000,0000,0000	1,880,739,938,304
55	35	5,0000,0000	8,398,080	5000,0000,0000,0000	2,350,924,922,880

<i>Dec.</i>	<i>Sez.</i>	<i>Decimal</i>	<i>Sezimal</i>	<i>Decimal</i>	<i>Sezimal</i>
0	0				
1	1	10	11,4144	100,000,000	135,3120,2544
2	2	20	23,2332	200,000,000	315,0240,5532
3	3	30	35,0520	300,000,000	454,3401,2520
4	4	40	50,5104	400,000,000	1034,0521,5504
5	5	50	102,3252	500,000,000	1213,4042,2452
6	10	60	114,1440	600,000,000	1353,1202,5440
7	11	70	130,0024	700,000,000	1532,4323,2424
8	12	80	141,4212	800,000,000	2112,1443,5412
9	13	90	153,2400	900,000,000	2251,5004,2400
10	14	100	205,0544	1,000,000,000	2431,2124,5344
20	32	200	414,1532	2,000,000,000	5302,4253,5132
30	50	300	1023,2520	3,000,000,000	1,2134,0422,4520
40	104	400	1232,3504	4,000,000,000	1,5005,2551,4304
50	122	500	1441,4452	5,000,000,000	2,1440,5120,4052
60	140	600	2050,5440	6,000,000,000	2,4312,1245,3440
70	154	700	2300,0424	7,000,000,000	3,1143,3414,3224
80	212	800	2505,1412	8,000,000,000	3,4014,5543,3012
90	230	900	3114,2400	9,000,000,000	4,0450,2112,2400
100	244	1,000,000	3323,3344	10,000,000,000	4,3321,4241,2144
200	532	2,000,000	1,1051,1132	20,000,000,000	13,1043,2522,4332
300	1220	3,000,000	1,4414,4520	30,000,000,000	21,4405,1204,0520
400	1504	4,000,000	2,2142,2304	40,000,000,000	30,2130,5445,3104
500	2152	5,000,000	2,5510,0052	50,000,000,000	34,5452,4130,5252
600	2440	6,000,000	3,3233,3440	60,000,000,000	43,3214,2412,1440
700	3124	7,000,000	4,1001,1224	70,000,000,000	52,0540,1053,4024
800	3412	8,000,000	4,4324,5012	80,000,000,000	100,4301,5335,0212
900	4100	9,000,000	5,2052,2400	90,000,000,000	105,2023,4020,2400
1	4344	10,000,000	5,5420,0144	100,000,000,000	113,5345,2301,4544
2	1,3132	20,000,000	15,5240,0332	200,000,000,000	231,5134,5003,3532
3	2,1520	30,000,000	25,5100,0520	300,000,000,000	345,4524,1305,2520
4	3,0304	40,000,000	35,4520,1104	400,000,000,000	503,4313,4011,1504
5	3,5052	50,000,000	45,4340,1252	500,000,000,000	1021,4103,0313,0452
6	4,3440	60,000,000	55,4200,1440	600,000,000,000	1135,3452,3014,5440
7	5,2224	70,000,000	105,4020,2024	700,000,000,000	1253,3241,5320,4424
8	10,1012	80,000,000	115,3440,2212	800,000,000,000	1411,3031,2022,3412
9	10,5400	90,000,000	125,3300,2400	900,000,000,000	1525,2420,4324,2400

Sezimal	Decimal	Sezimal	Decimal
$\frac{1}{2}$ 0.3	$\frac{1}{2}$ 0.5	0.5	$0.8\overline{3}$
$\frac{1}{3}$ 0.2	$\frac{1}{3}$ $0.\overline{3}$	0.4	$0.\overline{6}$
$\frac{1}{4}$ 0.13	$\frac{1}{4}$ 0.25	0.3	0.5
$\frac{1}{5}$ $0.\overline{1}$	$\frac{1}{5}$ 0.2	0.2	$0.\overline{3}$
$\frac{1}{10}$ 0.1	$\frac{1}{6}$ $0.1\overline{6}$	0.1	$0.1\overline{6}$
$\frac{1}{11}$ $0.0\overline{5}$	$\frac{1}{7}$ $0.143/$	0.05	$0.13\overline{8}$
$\frac{1}{12}$ 0.043	$\frac{1}{8}$ 0.125	0.04	$0.\overline{1}$
$\frac{1}{13}$ 0.04	$\frac{1}{9}$ $0.\overline{1}$	0.03	$0.08\overline{3}$
$\frac{1}{14}$ $0.0\overline{3}$	$\frac{1}{10}$ 0.1	0.02	$0.0\overline{5}$
$\frac{1}{15}$ 0.0314/	$\frac{1}{11}$ $0.0\overline{9}$	0.01	$0.02\overline{7}$
$\frac{1}{20}$ 0.03	$\frac{1}{12}$ $0.08\overline{3}$	0.005	$0.023\overline{148}$
$\frac{1}{21}$ $0.0244/$	$\frac{1}{13}$ $0.077/$	0.004	$0.0\overline{185}$
$\frac{1}{22}$ $0.02\overline{3}$	$\frac{1}{14}$ $0.071/$	0.003	$0.013\overline{8}$
$\frac{1}{23}$ $0.0\overline{2}$	$\frac{1}{15}$ $0.0\overline{6}$	0.002	$0.00\overline{925}$
$\frac{1}{24}$ 0.0213	$\frac{1}{16}$ $0.062\ 5$	0.001	$0.004\overline{629}$
$\frac{1}{25}$ $0.0204/$	$\frac{1}{17}$ $0.059/$	0.0005	$0.003\ 858\ 025/$
$\frac{1}{30}$ 0.02	$\frac{1}{18}$ $0.0\overline{5}$	0.0004	$0.003\ 086\ 420/$
$\frac{1}{31}$ $0.0152/$	$\frac{1}{19}$ $0.053/$	0.0003	$0.002\ 3\ 14\overline{8}$
$\frac{1}{32}$ $0.01\overline{4}$	$\frac{1}{20}$ 0.05	0.0002	$0.001\ 543\ 210/$
$\frac{1}{33}$ $0.0\overline{14}$	$\frac{1}{21}$ $0.048/$	0.0001	$0.000\ 771\ 605/$
$\frac{1}{34}$ $0.0135/$	$\frac{1}{22}$ $0.04\overline{5}$	0.0000 5	$0.000\ 643\ 004/$
$\frac{1}{35}$ $0.0132/$	$\frac{1}{23}$ $0.043/$	0.0000 4	$0.000\ 514\ 403/$
$\frac{1}{40}$ 0.013	$\frac{1}{24}$ $0.042/$	0.0000 3	$0.000\ 385\ 802/$
$\frac{1}{41}$ $0.0124/$	$\frac{1}{25}$ 0.04	0.0000 2	$0.000\ 257\ 202/$
$\frac{1}{42}$ $0.0122/$	$\frac{1}{26}$ $0.038/$	0.0000 1	$0.000\ 128\ 601/$
$\frac{1}{43}$ 0.012	$\frac{1}{27}$ $0.037/$	0.0000 05	$0.000\ 107\ 167/$
$\frac{1}{44}$ $0.011\overline{4}$	$\frac{1}{28}$ $0.036/$	0.0000 04	$0.000\ 085\ 734/$
$\frac{1}{45}$ $0.0113/$	$\frac{1}{29}$ $0.034/$	0.0000 03	$0.000\ 064\ 300/$
$\frac{1}{50}$ $0.0\overline{1}$	$\frac{1}{30}$ $0.0\overline{3}$	0.0000 02	$0.000\ 042\ 867/$
$\frac{1}{51}$ $0.0110/$	$\frac{1}{31}$ $0.032/$	0.0000 01	$0.000\ 021\ 433/$
$\frac{1}{52}$ 0.0104 3	$\frac{1}{32}$ $0.031\ 25$	0.0000 005	$0.000\ 017\ 861/$
$\frac{1}{53}$ $0.0103/$	$\frac{1}{33}$ $0.\overline{03}$	0.0000 004	$0.000\ 014\ 289/$
$\frac{1}{54}$ $0.0102/$	$\frac{1}{34}$ $0.029/$	0.0000 003	$0.000\ 010\ 717/$
$\frac{1}{55}$ $0.\overline{01}$	$\frac{1}{35}$ $0.029/$	0.0000 002	$0.000\ 007\ 144/$
$\frac{1}{100}$ 0.01	$\frac{1}{36}$ $0.028/$	0.0000 001	$0.000\ 003\ 572/$

<i>Decimal</i>	<i>Sezimal</i>
$\frac{1}{2}$ 0.5	$\frac{1}{2}$ 0.3
$\frac{1}{3}$ 0. $\overline{3}$	$\frac{1}{3}$ 0.2
$\frac{1}{4}$ 0.25	$\frac{1}{4}$ 0.13
$\frac{1}{5}$ 0.2	$\frac{1}{5}$ 0. $\overline{1}$
$\frac{1}{6}$ 0.1 $\overline{6}$	$\frac{1}{10}$ 0.1
$\frac{1}{7}$ 0.143/	$\frac{1}{11}$ 0. $\overline{05}$
$\frac{1}{8}$ 0.125	$\frac{1}{12}$ 0.043
$\frac{1}{9}$ 0. $\overline{1}$	$\frac{1}{13}$ 0.04
$\frac{1}{10}$ 0.1	$\frac{1}{14}$ 0. $\overline{03}$
$\frac{1}{11}$ 0. $\overline{09}$	$\frac{1}{15}$ 0.0314/
$\frac{1}{12}$ 0.08 $\overline{3}$	$\frac{1}{20}$ 0.03
$\frac{1}{20}$ 0.05	$\frac{1}{32}$ 0.01 $\overline{4}$
$\frac{1}{30}$ 0.0 $\overline{3}$	$\frac{1}{50}$ 0.0 $\overline{1}$
$\frac{1}{40}$ 0.025	$\frac{1}{104}$ 0.005 $\overline{2}$
$\frac{1}{50}$ 0.02	$\frac{1}{122}$ 0.0042/
$\frac{1}{60}$ 0.01 $\overline{6}$	$\frac{1}{140}$ 0.00 $\overline{3}$
$\frac{1}{70}$ 0.014/	$\frac{1}{154}$ 0.0030
$\frac{1}{80}$ 0.0125	$\frac{1}{212}$ 0.0024 $\overline{1}$
$\frac{1}{90}$ 0.0 $\overline{1}$	$\frac{1}{230}$ 0.00 $\overline{2}$
$\frac{1}{100}$ 0.01	$\frac{1}{244}$ 0.0021/

<i>Decimal</i>	<i>Sezimal</i>
0.9	0.5 $\overline{2}$
0.8	0. $\overline{4}$
0.7	0.4 $\overline{1}$
0.6	0. $\overline{3}$
0.5	0.3
0.4	0. $\overline{2}$
0.3	0.1 $\overline{4}$
0.2	0. $\overline{1}$
0.1	0.0 $\overline{3}$
0.09	0,03 $\overline{1235\ 0}$
0.08	0. $\overline{0251\ 4}$
0.07	0,02 $\overline{3041\ 5}$
0.06	0,0 $\overline{2054\ 3}$
0.05	0.01 $\overline{4}$
0.04	0. $\overline{0123\ 5}$
0.03	0.01 $\overline{0251\ 4}$
0.02	0.0 $\overline{0415\ 3}$
0.01	0.00 $\overline{2054\ 3}$
0.009	0.0015 3552 3133/
0.008	0.0014 2112 5323/
0.007	0.0013 0233 1512/
0.006	0.0011 4353 4102/
0.005	0.0010 2514 0252/
0.004	0.0005 1034 2441/
0.003	0.0003 5154 5031/
0.002	0.0002 3315 1221/
0.001	0.0001 1435 3410/
0.000 9	0.0001 0555 3532/
0.000 8	0.0001 0115 4054/
0.000 7	0.0000 5235 4220/
0.000 6	0.0000 4355 4341/
0.000 5	0.0000 3515 4503/
0.000 4	0.0000 3035 5025/
0.000 3	0.0000 2155 5151/
0.000 2	0.0000 1315 5312/
0.000 1	0.0000 0435 5434/

Use of base thirty-six

Base thirty-six (niftimal) cuts the size of sezimal numbers in half;

Each two sezimal digits correspond to one niftimal digit;

Since sezimal numbers have generally more digits than decimal ones, it might be an advantage to be able to shorten those numbers, using the niftimal base, somewhat like using Roman Numerals, writing dates and times, for instance, since those always have even sets of digits, representing days, months, years etc.

The most common conversion uses letters for digits starting from 14 (*10* ten), much in the same way it's used for hexadecimal numbers;

Conversion using diacritics is easier to remember, but using it on computers, smart-phones etc. is a little harder, both because typing the diacritics is not always available, and because fonts, for the most part, don't accept diacritics on top of numbers; the diacritics representing +30, +40 and +50, derive from the top part of the special digits Ƨ = °, Ƨ̄ = ¯ and Ƨ̂ = ˇ.

Today's date and time, for example, would be:

The 4th of November, 13.1355, at 33:24:51 (*The 2nd of November, 12.023, at 14:18:45*)
04/15/13.1355 33:24:51
4/B/99Z L:G:V ↔ 4/5/3̂3̂5̂ 3̂:4̂:1̂ ↔ Ƨ/Ƨ̂/Ƨ̂Ƨ̂ Ƨ̂:Ƨ̂:Ƨ̂

American style (month, day, year):

15/04/13.1355 33:24:51
B/4/99Z L:G:V ↔ 5̂/4̂/3̂3̂5̂ 3̂:4̂:1̂ ↔ Ƨ̂/Ƨ̂/Ƨ̂Ƨ̂ Ƨ̂:Ƨ̂:Ƨ̂

In an ISO-like format (YYYYYY-MM-DD UU:PP:AA):

131355-15-04 33:24:51
99Z-B-4 L:G:V ↔ 3̂3̂5̂-5̂-4̂ 3̂:4̂:1̂ ↔ Ƨ̂Ƨ̂Ƨ̂-Ƨ̂-Ƨ̂ Ƨ̂:Ƨ̂:Ƨ̂

1313551504332451 (24 *16* digits)
99ZB4LGV ↔ 3̂3̂5̂5̂4̂3̂4̂1̂ ↔ Ƨ̂Ƨ̂Ƨ̂Ƨ̂Ƨ̂Ƨ̂ (12 *8* digits)

Alphabetical

0 00	6 10	C 20	I 30	O 40	U 50
1 01	7 11	D 21	J 31	P 41	V 51
2 02	8 12	E 22	K 32	Q 42	W 52
3 03	9 13	F 23	L 33	R 43	X 53
4 04	A 14	G 24	M 34	S 44	Y 54
5 05	B 15	H 25	N 35	T 45	Z 55

Diacritics

0 00	ò 10	ö 20	ô 30	ō 40	ǒ 50
1 01	í 11	ï 21	î 31	ī 41	ǐ 51
2 02	ġ 12	ë 22	ĥ 32	ē 42	ǣ 52
3 03	č 13	ë 23	č 33	ē 43	ǣ 53
4 04	ġ 14	ë 24	ĥ 34	ē 44	ǣ 54
5 05	č 15	ë 25	č 35	ē 45	ǣ 55

Special Digits

0 00	ò 10	ö 20	ô 30	ō 40	ǒ 50
ı 01	ı̇ 11	ÿ 21	ı̈ 31	ı̄ 41	ı̆ 51
Ɛ 02	Ɛ̇ 12	Ɔ 22	Ɔ̇ 32	Ɔ̄ 42	Ɔ̆ 52
Ɔ 03	Ɔ̇ 13	Ɔ̈ 23	Ɔ̈ 33	Ɔ̈ 43	Ɔ̈ 53
Ɔ 04	Ɔ̇ 14	Ɔ̈ 24	Ɔ̈ 34	Ɔ̈ 44	Ɔ̈ 54
e 05	è 15	ë 25	ê 35	ē 45	ě 55