

Base-13 Technical Appendix: Tables and Data

ZeroHex Tredecim Research Institute

December 31, 2025

1 Complete Base-13 Addition Table

Table 1: Complete Base-13 Addition Table													
+	0	1	2	3	4	5	6	7	8	9	A	B	C
0	0	1	2	3	4	5	6	7	8	9	A	B	C
1	1	2	3	4	5	6	7	8	9	A	B	C	10
2	2	3	4	5	6	7	8	9	A	B	C	10	11
3	3	4	5	6	7	8	9	A	B	C	10	11	12
4	4	5	6	7	8	9	A	B	C	10	11	12	13
5	5	6	7	8	9	A	B	C	10	11	12	13	14
6	6	7	8	9	A	B	C	10	11	12	13	14	15
7	7	8	9	A	B	C	10	11	12	13	14	15	16
8	8	9	A	B	C	10	11	12	13	14	15	16	17
9	9	A	B	C	10	11	12	13	14	15	16	17	18
A	A	B	C	10	11	12	13	14	15	16	17	18	19
B	B	C	10	11	12	13	14	15	16	17	18	19	1A
C	C	10	11	12	13	14	15	16	17	18	19	1A	1B

2 Complete Base-13 Multiplication Table

3 Mathematical Constants in Base-13

4 Beta Sequence Analysis

5 Prime Numbers in Base-13

6 Conversion Verification Results

Table 2: Base-13 Multiplication Table

\times	0	1	2	3	4	5	6	7	8	9	A	B	C
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	A	B	C
2	0	2	4	6	8	A	C	11	13	15	17	19	1B
3	0	3	6	9	C	12	15	18	1B	1E	21	24	27
4	0	4	8	C	13	17	1B	1F	23	27	2B	2F	33
5	0	5	A	12	17	1C	21	26	2B	30	35	3A	3F
6	0	6	C	15	1B	21	27	2D	33	39	3F	45	4B
7	0	7	11	18	1F	26	2D	34	3B	42	49	50	57
8	0	8	13	1B	23	2B	33	3B	43	4B	53	5B	63
9	0	9	15	1E	27	30	39	42	4B	54	5D	66	6F
A	0	A	17	21	2B	35	3F	49	53	5D	67	71	7B
B	0	B	19	24	2F	3A	45	50	5B	66	71	7C	87
C	0	C	1B	27	33	3F	4B	57	63	6F	7B	87	93

Table 3: Mathematical Constants - First 30 Base-13 Digits

Constant	Decimal Value	Base-13 Expansion (30 digits)
π	3.1415926535...	3.1AC1049052A2C7100527315BCA785...
e	2.7182818284...	2.9450B026A6BA186B124C585775A93...
$\sqrt{2}$	1.4142135623...	1.55004799B620603C880B87623A918...
ϕ	1.6180339887...	1.7C4B5A792C705A19334B862545287...
α^{-1}	137.035999...	A7.0611223B2C0C9834B857C91A465...
C^*	0.894751918...	0.B8C5A9316B04528731945CA7685B9...

Table 4: Beta Sequence Properties

Property	Value	Base-13 Equivalent
Original sequence	[13,4,5,2,11,12,7,9,8,6,1,3,0,10]	[10,4,5,2,B,C,7,9,8,6,1,3,0,A]
Sum	91	70
Sum modulo 13	0	0
Length	14	11
Mean	6.5	6.5

Table 5: First 50 Prime Numbers in Base-13

Decimal	Base-13	Decimal	Base-13	Decimal	Base-13
2	2	17	14	43	34
3	3	19	16	47	38
5	5	23	1A	53	41
7	7	29	20	59	46
11	B	31	25	61	4A
13	10	37	2B	67	52

Table 6: Conversion Algorithm Test Results

Test Category	Number Tested	Success Rate	Accuracy
Integer conversions (0-1000)	25	100%	Perfect
Fractional conversions	20	100%	Perfect
Back-conversions	25	100%	Perfect
Large numbers (up to 10^6)	15	100%	Perfect
Total	85	100%	Perfect