FOR CONVERSION TO DECIMAL

	Column 5	Column 4	Column 3	Column 2	Column 1
Decimal Each column carries a value **10** times that of the column on its right	**# of 10000s**	**# of 1000s**	**# of 100s**	**# of 10s**	**# of 1s**
Binary Each column carries a value **2** times that of the column on its right	**# of 16s**	**# of 8s**	**# of 4s**	**# of 2s**	**# of 1s**
Octal Each column carries a value **8** times that of the column on its right **I**	**# of 4096s**	**# of 512s**	**# of 64s**	**# of 8s**	**# of 1s**
Hexadecimal Each column carries a value **16** times that of the column on its right	**# of 65536s**	**# of 4096s**	**# of 256s**	**# of 16s**	**# of 1s**

Value in **Column 5 +** Value in **Column 4 +** Value in **Column 3 +** Value in **Column 2 +** Value in **Column 1 = Decimal Equiv.**

FOR DECIMAL CONVERSION TO HEX:

1. Choose the largest power of 16 that is less than the decimal number to be converted.

2. Find out how many times that power of 16 is present in the decimal number and write it down as the left most converted Hex digit.

3. Subtract the total value represented by that Hex digit from the decimal number.

4. Repeat the process using the next smallest power of 16 until you've subtracted the decimal number down to nothing.

Example: 449

1. 449 ÷ 256 (largest power of 16) = 1.7539
2. Write down 1
3. 449 - 256 = 193 (save 193)
4. Move to 16s column
5. 193 ÷ 16 = 12.0625
6. 12 = C in Hex. Write C to right of the 1 = 1C
7. C x 16 = 12 x 16 = 192
8. 193 - 192 = 1
9. 1C1

BINARY NUMBER CONVERSION

BITS TO NUMBER OF DECIMAL COMBINATIONS

Binary Bit Places	**1**	**2**	**3**	**4**	**5**
DEC Combinations	**1**	**4**	**8**	**16**	**32**
Binary Bit Places	**6**	**7**	**8**	**9**	**10**
DEC Combinations	**64**	**128**	**256**	**512**	**1,024**
Binary Bit Places	**11**	**12**	**13**	**14**	**15**
DEC Combinations	**2,048**	**4,096**	**8,192**	**16,384**	**32,768**
Binary Bit Places	**16**	**17**	**18**	**19**	**20**
DEC Combinations	**65,536**	**131,072**	**262,144**	**524,288**	**1,048,576**
Binary Bit Places	**21**	**22**	**23**	**24**	**25**
DEC Combinations	**2,097,152**	**4,194,304**	**8,388,608**	**16,777,216**	**33,554,432**
Binary Bit Places	**26**	**27**	**28**	**29**	**30**
DEC Combinations	**67,108,864**	**134,217,728**	**268,435,456**	**536,870,912**	**1,073,741,824**
Binary Bit Places	**31**	**32**	**33**	**34**	**35**
DEC Combinations	**2,147,483,648**	**4,294,967,296**	**8,589,934,592**	**17,179,869,184**	**34,359,738,368**
Binary Bit Places	**36**	**37**	**38**	**39**	**40**
DEC Combinations	**68,719,476,736**	**137,438,953,472**	**274,877,906,944**	**549,755,813,888**	**1,099,511,627,776**
Binary Bit Places	**41**	**42**	**43**	**44**	**45**
DEC Combinations	**2,199,023,255,552**	**4,398,046,511,104**	**8,796,093,022,208**	**17,592,186,044,416**	**35,184,372,088,832**

HEXIDECIMAL TO DECIMAL NUMBER CONVERSION

DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX
0	O0	45	2D	90	5A	135	87	180	B4
1	O1	46	2E	91	5B	136	88	181	B5
2	O2	47	2F	92	5C	137	89	182	B6
3	O3	48	30	93	5D	138	8A	183	B7
4	O4	49	31	94	5E	139	8B	184	B8
5	O5	50	32	95	5F	140	8C	185	B9
6	O6	51	33	96	60	141	8D	186	BA
7	O7	52	34	97	61	142	8E	187	BB
8	O8	53	35	98	62	143	8F	188	BC
9	O9	54	36	99	63	144	90	189	BD
10	0A	55	37	100	64	145	91	190	BE
11	0B	56	38	101	65	146	92	191	BF
12	0C	57	39	102	66	147	93	192	C0
13	0D	58	3A	103	67	148	94	193	C1
14	0E	59	3B	104	68	149	95	194	C2
15	0F	60	3C	105	69	150	96	195	C3
16	10	61	3D	106	6A	151	97	196	C4
17	11	62	3E	107	6B	152	98	197	C5
18	12	63	3F	108	6C	153	99	198	C6
19	13	64	40	109	6D	154	9A	199	C7
20	14	65	41	110	6E	155	9B	200	C8
21	15	66	42	111	6F	156	9C	201	C9
22	16	67	43	112	70	157	9D	202	CA
23	17	68	44	113	71	158	9E	203	CB
24	18	69	45	114	72	159	9F	204	CC
25	19	70	46	115	73	160	A0	205	CD
26	1A	71	47	116	74	161	A1	206	CE
27	1B	72	48	117	75	162	A2	207	CF
28	1C	73	49	118	76	163	A3	208	D0
29	1D	74	4A	119	77	164	A4	209	D1
30	1E	75	4B	120	78	165	A5	210	D2
31	1F	76	4C	121	79	166	A6	211	D3
32	20	77	4D	122	7A	167	A7	212	D4
33	21	78	4E	123	7B	168	A8	213	D5
34	22	79	4F	124	7C	169	A9	214	D6
35	23	80	50	125	7D	170	AA	215	D7
36	24	81	51	126	7E	171	AB	216	D8
37	25	82	52	127	7F	172	AC	217	D9
38	26	83	53	128	80	173	AD	218	DA
39	27	84	54	129	81	174	AE	219	DB
40	28	85	55	130	82	175	AF	220	DC
41	29	86	56	131	83	176	B0	221	DE
42	2A	87	57	132	84	177	B1	222	DF
43	2B	88	58	133	85	178	B2	223	E1
44	2C	89	59	134	86	179	B3	224	E2

BINARY COLUMNS AS POWERS OF 2

Binary	Power of 2	Decimal
1	2^0	1 x 2 =
10	2^1	2 x 2 =
100	2^2	4 x 2 =
1000	2^3	8 x 2 =
10000	2^4	16 x 2 =
100000	2^5	32 x 2 =
1000000	2^6	64 x 2 =
10000000	2^7	128 x 2 =
100000000	2^8	256 x 2 =
1000000000	2^9	512 x =
10000000000	2^{10}	1024 x 2 =
100000000000	2^{11}	2048 x 2 =
1000000000000	2^{12}	4096 x 2 =
10000000000000	2^{13}	8192 x 2 =
100000000000000	2^{14}	16394 x 2 =
1000000000000000	2^{15}	32768 x 2 =
10000000000000000	2^{16}	65536 x 2 =
100000000000000000	2^{17}	131072 x 2 =
1000000000000000000	2^{18}	262144 x 2 =
10000000000000000000	2^{19}	524288 x 2 =
100000000000000000000	2^{20}	1048567 x 2 =
1000000000000000000000	2^{21}	2097152 x 2 =
10000000000000000000000	2^{22}	4194304 x 2 =
100000000000000000000000	2^{23}	8388608 x 2 =
1000000000000000000000000	2^{24}	16777216 x 2 =
10000000000000000000000000	2^{25}	33554432 x 2 =
100000000000000000000000000	2^{26}	67108864 x 2 =
1000000000000000000000000000	2^{27}	134217728 x 2 =
10000000000000000000000000000	2^{28}	268435456 x 2 =
100000000000000000000000000000	2^{29}	536870912 x 2 =
1000000000000000000000000000000	2^{30}	1073741824 x 2 =
10000000000000000000000000000000	2^{31}	2147483648 x 2 =
100000000000000000000000000000000	2^{32}	4294967296 x 2 =