NSS

Computer Math

Binary Math

Good intro to Binary Math

Decimal Systems

1000^m	10^n	Prefix	Symbol	Since[1]	Short scale	Long scale	Decimal
1000^8	10^{24}	yotta-	Y	1991	Septillion	Quadrillion	1 000 000 000 000 000 000 000 000
1000^7	10^{21}	zetta-	Z	1991	Sextillion	Trilliard	1 000 000 000 000 000 000 000
1000^6	10^{18}	exa-	E	1975	Quintillion	Trillion	1 000 000 000 000 000 000
1000^5	10^{15}	peta-	P	1975	Quadrillion	Billiard	1 000 000 000 000 000
1000^4	10^{12}	tera-	T	1960	Trillion	Billion	1 000 000 000 000
1000^3	10^9	giga-	G	1960	Billion	Milliard	1 000 000 000
1000^2	10^6	mega-	M	1960	Million		1 000 000
1000^1	10^3	kilo-	k	1795	Thousand		1 000
$1000^{2/3}$	10^2	hecto-	h	1795	Hundred		100
$1000^{1/3}$	10^1	deca-	da	1795	Ten		10
1000^0	10^0						1

Binary Systems

Base 2 System

Consists of only 1’s and 0’s

Binary Systems

Bit Values

0	0	0	0	0	0	0	0
128	64	32	16	8	4	2	1

Binary System

Bit Values

1	0	0	0	1	0	0	1
128	64	32	16	8	4	2	1

10001001 = 128 + 8 + 1 = 137

Practice

10101010
11101101
01000001
00100111
01001101
00110111
00001101

01011110
10010011
11100010
01010101
11110000
10110001
11111111

Practice

10101010 - 170
11101101 - 237
01000001 - 65
00100111 - 39
01001101 - 77
00110111 - 55
00001101 - 13

01011110 - 94
10010011 - 147
11100010 - 226
01010101 - 85
11110000 - 240
10110001 - 177
11111111 - 255

Practice

63

99

72

15

18

56

81

182

46

27

169

200

Practice

63 - 00111111

99 - 01100011

72 - 01001000

15 - 00001111

18 - 00010010

56 - 00111000

81 - 01010001

182 - 10110110

46 - 00101110

27 - 00011011

169 - 10101001

200 - 11001000

Hexadecimal

A Base 16 system

Uses 0-9 and A-F

A=10, B=11, C=12, D=13, E=14, F=15

0x11AB = 0X11AB = 11ABh = $11AB

4096 256 16 1

Practice

0x12EF

0x342

0xE59

0x2F

0x20A

0xFF

0x200

0xF0

0x400

0x142

0x29A

0x1E

Practice

0x12EF - 4847

0x342 - 834

0xE59 - 3673

0x2F - 47

0x20A - 522

0xFF - 255

0x200 - 512

0xF0 - 240

0x400 - 1024

0x142 - 322

0x29A - 666

0x1E - 30