$(16)_{10} = (10000)_2$

BIT = 0 or 1

$= +(1.0000\ldots0)_2 \times 2^4$

SIGN	EXPONENT	MANTISSA
+	4	00000
1	11	52

1 + 11 + 52 = 64

$1023 + 4 = 1027 = 1024 + 2 + 1$

0

1 00000000011

10 9 8 7 6 5 4 3 2 1 0

$1027 = (10000000011)_2$

11 bits represents the exponent 4

$2^{11} = 2048$

~~0, 1, 2, 3 .. 2047~~

2048 numbers

$-1023, -1022, \ldots -1, 0, 1, \ldots 1024$

Reserved.

Reserved

0000000 — 11 zeros

11 ones

exponent is 4

$1023 + 4 = 1027 = (-1)_2$

64 bits

1	2	3	4	16
0,100	0000	0011	0000	0000
4	0	3	0 ...	0

$37.24 = +3.724 \times 10^{1}$

$(12.5)_{10} = (1100.1)_2$

$= (1.1001)_2 \times 2^3$

0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F

$(23)_{16} = (35)_{10}$

$(1F)_{16} = (31)_{10}$

$0x(4030\ 0000\ 0000\ 0000)$

↑ represents 16 in 64-bit on the computer