BINARY = BASE 2

OCTAL = BASE 8

HEX = BASE 16

## BINARY

DIGITS
0, 1

$100101_2 = ?_{10}$

$2^5 \ 2^4 \ 2^3 \ 2^2 \ 2^1 \ 2^0$

$1 \times 2^5 = 1 \times 32 = 32$
$0 \times 2^4 = 0 \times 16 = 0$
$0 \times 2^3 = 0 \times 8 = 0$
$1 \times 2^2 = 1 \times 4 = 4$
$0 \times 2^1 = 0 \times 2 = 0$
$1 \times 2^0 = 1 \times 1 = +\ 1$

$37_{10}$

## HEX

DIGITS
0, 1, 2, 3, 4, 5
6, 7, 8, 9, A = 10,
B = 11, C = 12, D = 13,
E = 14, F = 15

$284_{16}$

$16^2 \ 16^1 \ 16^0$

$16^2 = (2^4)^2 = 2^8$

$2 \times 16^2 = 2 \times 256 = 512$
$8 \times 16^1 = 11 \times 16 = 176$
$4 \times 16^0 = 4 \times 1 = 4$

$692_{10}$

HEX TO BINARY (4 PLACES TO 1)

$3B7AC_{16} = ?_2$

0011101101111010110010

00312

$10100101110100110_2 = ?_{16}$

$2\ 9\ 7\ 4\ 6_{16}$

OCTAL?? BASE 8 DIGITS 0, 1, 2, 3, 4, 5, 6, 7

BINARY TO OCATAL (3 PLACE TO 1)

$100101011011_2 = ?_8$

$8^2 = (2^3)^2 = 2^6$

$1\ 1\ 2\ 6\ 7_8$

$(2^3)^4 \ (2^3)^3$

$2^{12} \ 2^9$

$340{,}708_{10}$

$340{,}708.0 = 3.40708 \times 10^5$

FLOATING POINT NUMBER