

**7-Octal to decimal****EXAMPLE 1:** convert (2764) octal to decimal

Octal	2	7	6	4
Convert	$2*8^3$	$7*8^2$	$6*8^1$	$4*8^0$
Decimal	1024	448	48	4



$$1024 + 448 + 48 + 4 = (1524)_D$$

**EXAMPLE 2:** convert (254) octal to decimal

Octal	2	5	4
Convert	$2*8^2$	$5*8^1$	$4*8^0$
Decimal	128	40	4



$$128 + 40 + 4 = (172)_D$$

**EXAMPLE 3:** convert (435) octal to decimal

Octal	4	3	5
Convert	$4*8^2$	$3*8^1$	$5*8^0$
Decimal	256	24	5



$$256 + 24 + 5 = (285)_D$$

## 8-Octal to Binary

To convert octal to binary, replace each octal digit by its binary representation.

(0)O	→(000)B
(1)O	→(001)B
(2)O	→(010)B
(3)O	→(011)B
(4)O	→(110)B
(5)O	→(101)B
(6)O	→(110)B
(7)O	→(111)B

**EXAMPLE 1:** convert (27643) octal to binary

Octal	2	7	6	4	3
Binary	010	111	110	100	011

The binary number : (010111110100011)B

**EXAMPLE 2:** convert (23453) octal to binary

Octal	2	3	4	5	3
Binary	010	011	100	101	011

The binary number : (010011100101011)B

**EXAMPLE 3:** convert (46534) octal to binary

Octal	4	6	5	3	4
Binary	100	110	101	011	100

The binary number : (100110101011100)B

## 9-Octal To hexadecimal

The conversion is made in two steps using binary as an intermediate base. Octal is converted to binary and then binary to hexadecimal, grouping digits by fours, which correspond each to a hexadecimal digit.

**Example1:** convert octal 1057 to hexadecimal

**First step convert it to binary number**

$$(1057)_O = (001000101111)_B$$

**second step convert it to hexadecimal number**

$$(001000101111)_B = (22F)_H$$

## 10-hexadecimal to decimal

**EXAMPLE 1:** convert (1AB2) hexadeciml to decimal

Hexa	1	A	B	2
Convert	$1 \cdot 16^3$	$10 \cdot 16^2$	$11 \cdot 16^1$	$2 \cdot 16^0$
Decimal	4096	2560	176	2



$$4096 + 2560 + 176 + 2 = (6834)_D$$

**EXAMPLE 2:** convert (DFE5) hexadeciml to decimal

Hexa	D	F	E	5
Convert	$13 \cdot 16^3$	$15 \cdot 16^2$	$14 \cdot 16^1$	$5 \cdot 16^0$
Decimal	53248	3840	224	5



$$53248 + 3840 + 224 + 5 = (57317)_D$$

## 11- hexadecimal to Binary

To convert hexadecimal to binary, replace each hexadecimal digit by its binary representation.

(0)H	→(0000)B
(1)H	→(0001)B
(2)H	→(0010)B
(3)H	→(0011)B
(4)H	→(0110)B
(5)H	→(0101)B
(6)H	→(0110)B
(7)H	→(0111)B
(8)H	→(1000)B
(9)H	→(1001)B
(A)H	→(1010)B
(B)H	→(1011)B
(C)H	→(1110)B
(D)H	→(1101)B
(E)H	→(1110)B
(F)H	→(1111)B

**EXAMPLE 1:** convert (1011101010111100) binary to hexadecimal

Binary	1011	1010	1011	1100
Octal	B	A	B	C



The hexadecimal number : (BABC)<sub>O</sub>

## 12-Octal To hexadecimal

The conversion is made in two steps using binary as an intermediate base. hexadecimal is converted to binary and then binary to octal, grouping digits by threes, which correspond each to a octal digit.

**Example1:** convert hexadecimal AB6 to octal

**First step convert it to binary number**

$$(AB6)H = (101010110110)B$$

**second step convert it to octal number**

$$(101010110110)B = (5266)O$$