

Conversion from one number
system to another

Converting from another base to decimal

- Determine the position value of each digit

- Multiply the obtained position values by the digits in the corresponding columns

- Sum up the product calculated in step2

- This total is equivalent in decimal

Binary to decimal conversion

BINARY NUMBER

- $11001_2 = ?_{10}$

- Solution:
- Determine column values
- column number column value
- (from right)
- 1 $2^0=1$
- 2 $2^1=2$
- 3 $2^2=4$
- 4 $2^3=8$
- 5 $2^4=16$

step2

- Multiply the column values by the corresponding column digits
- 16 8 4 2 1
- X1 x1 x0 x0 x1
- ---

16 8 0 0 1

step3

- Sum up the product
- $16+8+0+0+1=25$

Hence

$$11001_2 = 25_{10}$$

Another method

- $11001_2 = ?_{10}$

11001 is a binary number (base 2)

Write the position of each number (R-L)

1 1 0 0 1 (binary number)

5 4 3 2 1 (position of each digit in binary number)

2^4 2^3 2^2 2^1 2^0 (value of each position)

- $1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

- $16 + 8 + 0 + 0 + 1$

$= 25$

Hence

$11001_2 = 25_{10}$