

binary \rightarrow decimal

1) 1011

$$1 \times 2^3 = 8$$

$$0 \times 2^2 = 0$$

$$1 \times 2^1 = 2$$

$$1 \times 2^0 = 1$$

$$= 11$$

2) $37_8 \rightarrow$ decimal

$$8^1 \times 3 = 24$$

$$8^0 \times 7 = 7$$

$$= 31$$

c) $1F \rightarrow 1115$

$$16^1 \times 1 \rightarrow 16$$

$$16^0 \times 15 \rightarrow 15$$

$$= 31$$

Convert binary

a) $25 \rightarrow$ binary

$$25 \div 2 = 12 \text{ R } 1$$

$$12 \div 2 = 6 \text{ R } 0$$

$$6 \div 2 = 3 \text{ R } 0 \quad = 11001$$

$$3 \div 2 = 1 \text{ R } 1$$

$$1 \div 2 = 0 \text{ R } 1$$

b) 7E

7 and 14

\rightarrow convert each to 1 bit binary

$$7 \div 2 = 3 \text{ R } 1$$

$$3 \div 2 = 1 \text{ R } 1$$

$$1 \div 2 = 0 \text{ R } 1$$

$$0$$

$$14 \div 2 = 7 \text{ R } 0$$

$$7 \div 2 = 3 \text{ R } 1$$

$$3 \div 2 = 1 \text{ R } 1$$

$$1 \div 2 = 0 \text{ R } 1$$

01111110

binary \rightarrow hex

\rightarrow group 4 bits \rightarrow right \rightarrow convert to hex

11101010 \rightarrow 1110 1010

$$1 \times 2^3 = 8 \quad 1 \times 2^3 = 8$$

$$1 \times 2^2 = 4 \quad 0 \times 2^2 = 0$$

$$1 \times 2^1 = 2 \quad 1 \times 2^1 = 2$$

$$0 \times 2^0 = 0 \quad 0 \times 2^0 = 0$$

$$= A \rightarrow E \quad 10 \rightarrow A$$

= EA

hex \rightarrow decimal

$$1A = (1 \times 16^1) + (10 \times 16^0) = 16 + 10 = 26$$

binary octal

110011 \rightarrow

$$\begin{array}{r} 110 \quad 011 \\ 1 \times 2^2 = 4 \quad 0 \times 2^2 = 0 \end{array} = 3$$

$$1 \times 2^1 = 2 \quad 0 \times 2^1 = 0$$

$$0 \times 2^0 = 0 \quad 1 \times 2^0 = 1$$

= 6

= 3