

Exercise 1.14

2) $1110 = 14$

b) $100 - 100 = 36$

$$\odot -11010111 = 215$$

d) 0111010100100
 $\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$
 $0192 \quad 2048 \quad 512 \quad 128 \quad 32 \quad 4$
 4096

$$\begin{array}{r} 8192 \\ 4096 \\ 2048 \\ 1024 \\ 512 \\ 256 \\ 128 \\ 64 \\ 32 \\ 16 \\ 8 \\ 4 \\ \hline 15012 \end{array}$$

Exercise 1.16

$$a) 1110 = \text{E}$$

$$b) 100100 = \underset{\substack{\uparrow \\ 2}}{0010} \mid \underset{\substack{\uparrow \\ 4}}{0100} = \text{24}$$

$$c) 11010111 = \underset{\substack{\uparrow \\ \text{D}}}{1101} \mid \underset{\substack{\uparrow \\ 7}}{0111} = \text{D7}$$

$$d) 011101010100100 =$$

$$\underset{\substack{\uparrow \\ 3}}{0011} \mid \underset{\substack{\uparrow \\ \text{A}}}{1010} \mid \underset{\substack{\uparrow \\ \text{A}}}{1010} \mid \underset{\substack{\uparrow \\ 4}}{0100} = \text{3AA4}$$

Exercise 1.18

$$a) 4E \rightarrow 4 \cdot 16^1 + 14 \cdot 16^0 = 64 + 14 = 78$$

$$b) 7C \rightarrow 7 \cdot 16^1 + 12 \cdot 16^0 = 112 + 12 = 124$$

$$c) ED3A \rightarrow 14 \cdot 16^3 + 13 \cdot 16^2 + 3 \cdot 16^1 + 10 \cdot 16^0 = 57344 + 3328$$

$$d) 403FB001 \quad + 48 + 10 =$$

$$60730$$



$$4 \cdot 16^7 + 0 \cdot 16^6 + 3 \cdot 16^5 + 15 \cdot 16^4 + 11 \cdot 16^3 + 0 \cdot 16^2 + 0 \cdot 16^1 + 1$$

$$1073741824 + 3145728 + 903040 + 45056 + 1 =$$

$$1077915649$$

Exercise 1.22

a) 1110

$$-2^3 + 2^2 + 2 = -8 + 4 + 2 = -2$$

b) 100011

$$-2^5 + 2 + 1 = -32 + 3 = -29$$

$$c) \begin{array}{ccccccc} 0 & 1 & 0 & 0 & 1 & 1 & 1 & 0 \\ & \downarrow & & & \downarrow & \downarrow & \downarrow & \\ & 64 & & & 8 & 4 & 2 & \end{array} = 64 + 8 + 4 + 2 = 78$$

d) 10110101

$$-2^7 + 2^5 + 2^4 + 2^2 + 1 = -128 + 32 + 16 + 4 + 1 = -75$$