

Conversion Lab Scratch Work

$$ABC_{16} = A(10) \quad B(11) \quad C(12)$$

1 0 1 0	1 0 1 1	1 1 0 0
<u> </u>	<u> </u>	<u> </u>
		$2^3 \ 2^2 \ 2^1 \ 2^0$

$$= \underbrace{101010111100}_2$$

5
2
7
4

$$= 5274_8$$

$$= 5 \times 8^3 + 2 \times 8^2 + 7 \times 8^1 + 4 \times 8^0$$

$$= \underline{2748}$$

$$10 \times 16^2 + 11 \times 16^1 + 12 \times 16^0$$

$$= 2748 \quad \checkmark$$

$$765_8 = \begin{array}{ccc} 7 & 6 & 5 \\ \boxed{111} & \boxed{110} & \boxed{101} \end{array}$$

$$= \underbrace{111110101}_2$$

1
15
5

$$= 1F5_{16}$$

$$= 1 \times 16^2 + 15 \times 16^1 + 5 \times 16^0$$

$$= 501$$

6)

$$1101100_2 = \begin{array}{ccc} 1101100_2 \\ \hline 1 & 5 & 4 \end{array}$$

$$= 154_8$$

$$= \begin{array}{cc} 1101100_2 \\ \hline 6 & 12 \end{array}$$

$$= 6C_{16}$$

$$= 6 \times 16^1 + 12 \times 16^0$$

$$= 108$$

$$85_{10} = 5 \times 16^1 + 5 \times 16^0$$

$$= 55_{16}$$

$$= \begin{array}{cc} 5 & 5 \\ 0101 & 0101 \end{array}$$

$$= \begin{array}{ccccccc} 0 & 1 & 0 & 1 & 0 & 1 & 0 \\ \hline & 1 & 2 & 5 & & & \end{array}_2$$

$$= 125_8$$

$$762_{10} = 2 \times 16^2 + 15 \times 16^1 + 10 \times 16^0$$

$$= 2FA_{16}$$

$$= \begin{array}{ccc} 2 & F & A \\ 10 & 1111 & 1010 \end{array}$$

$$= \begin{array}{ccccccc} 0 & 1 & 1 & 1 & 1 & 0 & 1 & 0 \\ \hline & 1 & 3 & 7 & 2 & & & \end{array}_2$$

$$= 1372_8$$

Base 10 Base 2 Base 8 Base 16

$$127 = 1111111 = 177 = 7F$$

$$21 = 10101 = 25 = 15$$

$$57 = 111001 = 71 = 39$$

$$171 = 10101011 = 253 = AB$$

$$127_{10} = \underline{7} \times 16^1 + \underline{15} \times 16^0$$

$$= 7F_{16}$$

$$= \begin{array}{ccc} 7 & & F \\ & 111 & 1111 \end{array}$$

$$= \begin{array}{ccccccc} 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ \hline & 1 & 7 & 7 & & & \end{array}$$

$$= 177_8$$

$$10101_2 = \begin{array}{cc} \underline{101} & \underline{01} \\ 2 & 5 \end{array}$$

$$= 25_8$$

$$= \begin{array}{cc} \underline{10101} \\ 1 & 5 \end{array}$$

$$= 15_{16}$$

$$= 1 \times 16 + 5 \times 16^0$$

$$= 21_{10}$$

$$71_8 = \begin{array}{ccc} 7 & & 8 \\ & 111 & 100 \end{array}$$

$$= \begin{array}{ccccccc} 1 & 1 & 1 & 1 & 0 & 0 & 1 \\ \hline & 3 & 12 & & & & \end{array}$$

$$= 3C_{16}$$

$$= 3 \times 16^1 + 12 \times 16^0$$

$$= 48 + 12$$

$$= 60$$

$$AB_{16} = \begin{array}{cc} A(10) & B(11) \\ 1010 & 1011 \end{array}$$

$$= \begin{array}{c} 10101011_2 \\ \hline 253 \end{array}$$

$$= 253_8$$

$$= 10 \times 16^1 + 11 \times 16^0$$

$$= 160 + 11$$

$$= 171_{10}$$