

Leonardo Fesser

August 30th

a) BCD: clear 0111

Decimal: $\boxed{47_{10}}$

b) BEB: 1001 0011

Decimal: $\boxed{93_{10}}$

c) BED: 0001 0010

Decimal: $\boxed{12_{10}}$

d) BED: 0110 1001

Decimal: $\boxed{169_{10}}$

e) BED: 0101 0110

Decimal: $\boxed{56_{10}}$

f) BED: 0110 1000 0011 1001

Decimal: $\boxed{6839_{10}}$

2a) Decimal: 57

~~1010101~~ BED: $\boxed{111001_2}$

$$\begin{array}{r} 28 \\ \overline{)57} \\ -56 \\ \hline 1 \end{array} \quad \begin{array}{r} 14 \\ \overline{)28} \\ -28 \\ \hline 0 \end{array} \quad \begin{array}{r} 7 \\ \overline{)14} \\ -14 \\ \hline 0 \end{array} \quad \begin{array}{r} 3 \\ \overline{)6} \\ -6 \\ \hline 0 \end{array} \quad \begin{array}{r} 1 \\ \overline{)3} \\ -3 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \overline{)0} \\ -0 \\ \hline 0 \end{array}$$

b) Decimal: 13

$$\begin{array}{r} 6 \\ \overline{)13} \\ -12 \\ \hline 1 \end{array} \quad \begin{array}{r} 3 \\ \overline{)6} \\ -6 \\ \hline 0 \end{array} \quad \begin{array}{r} 1 \\ \overline{)3} \\ -3 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \overline{)0} \\ -0 \\ \hline 0 \end{array}$$

c) BED: $\boxed{1101_2}$

c) Decimal: 179

$$\begin{array}{r} 27 \\ \overline{)179} \\ -14 \\ \hline 39 \\ -27 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$

BED: $\boxed{10110011_2}$

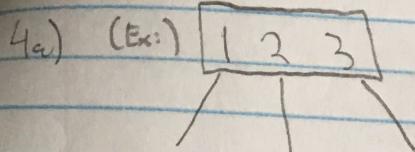
d) Decimal: 29

$$\begin{array}{r} 14 \\ \overline{)29} \\ -28 \\ \hline 1 \end{array} \quad \begin{array}{r} 7 \\ \overline{)14} \\ -14 \\ \hline 0 \end{array} \quad \begin{array}{r} 3 \\ \overline{)6} \\ -6 \\ \hline 0 \end{array} \quad \begin{array}{r} 1 \\ \overline{)3} \\ -3 \\ \hline 0 \end{array} \quad \begin{array}{r} 0 \\ \overline{)0} \\ -0 \\ \hline 0 \end{array}$$

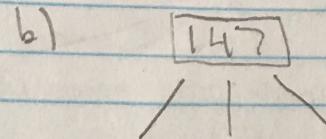
BED: $\boxed{1110K_2}$

Leonardo Pugner

August 20^m



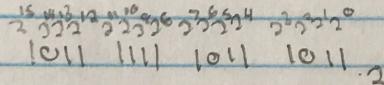
0001 0010 0011



0001 0100 0111

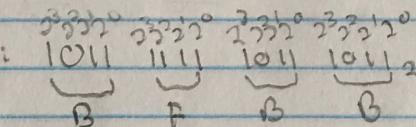
Series of
4 bits

$$\times 3 = \boxed{12 \text{ bits total}}$$

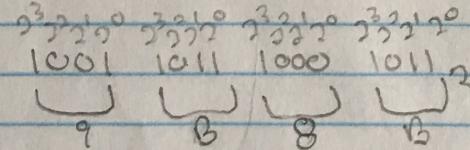
5a) Binary: 

$$(2^0 \times 1) + (2^1 \times 1) + (2^2 \times 0) + (2^3 \times 1) + (2^4 \times 1) + (2^5 \times 1) + (2^6 \times 0) + \\ (2^7 \times 1) + (2^8 \times 1) + (2^9 \times 1) + (2^{10} \times 1) + (2^{11} \times 1) + (2^{12} \times 1) + (2^{13} \times 1) + \\ (2^{14} \times 0) + (2^{15} \times 1) = 49'083_{10}$$

Decimal: $49'083_{10}$

Binary: 

Hexadecimal: \boxed{BFBB}_{16}

b) Binary: 

Hexadecimal: $\boxed{9888}_{16}$

Leonardo Ruzin

4a)

(Ex.)

e) Decimal: 2542

$$2 \overline{) 2542}$$

Bin: 100111101110₂

x

b) $c_0 = 25_{16} = \boxed{100101_2}$

b) CPU = $232_{16} = \boxed{1000110010_2}$

c) $97 = 112_{16} = \boxed{1000110010_2}$

d) ${}^1 = 94_{16} = \boxed{10010100_2}$

e) $? = 63_{16} = \boxed{1100011_2}$

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②

Leonardo

Binary

c) Hexadecimal: 9740_{16}

Binary: $1001\ 0111\ 0100\ 0000$

12 bits total

d) Binary: 1001.0010_2

Decimal: 9.125_{10}

(a) Decimal: 83.5_{10}

Binary: 1010011.1_2

$$\begin{array}{r} 41 & 20 & 10 & 5 & 2 & 1 & 0 \\ \overline{2 \sqrt{83}} & \overline{2 \sqrt{41}} & \overline{2 \sqrt{20}} & \overline{2 \sqrt{10}} & \overline{2 \sqrt{5}} & \overline{2 \sqrt{2}} & \overline{2 \sqrt{1}} \\ -82 & -40 & -20 & -10 & -4 & -2 & -0 \\ \hline \textcircled{1} & \textcircled{1} & \textcircled{0} & \textcircled{0} & \textcircled{1} & \textcircled{0} & \textcircled{1} \\ & & & & & & \\ & & & & & & .5 \\ & & & & & & \times 2 \\ & & & & & & \textcircled{0.0} \end{array}$$

b) Decimal: 83.5_{10}

Hexadecimal: 53.8_{16}

$$\begin{array}{r} 5 & 0 \\ 16 \sqrt{83} & 16 \sqrt{5} \\ -80 & -0 \\ \hline \textcircled{3} & \textcircled{5} \\ & \times 16 \\ & \textcircled{8.0} \end{array}$$

c) Binary: 101010.11_2

Decimal: 42.75_{10}

④

Leonardo Fussen

August 30th

(7) Binary representation of 127 : 01111110

(Q1) 1's complement : 11111110

2's complement : 11111111

(Q2) largest positive value represented with unsigned 8-bit number = 255_{10}

(Q3) unsigned 8-bit binary value 10100110 = 166

(Q4) signed 8-bit binary value 10100110 = -90

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