

1.  $9_{10} + C6_{16}$

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$$9_{10} = 64 + 16 + 8 + 2 + 1$$

$$\therefore 9_{10} = 1011011_2$$

$$C6_{16} = 11000110_2$$

$$\begin{array}{r} 01011011 \\ + 11000110 \\ \hline 100100001 \end{array}$$

$$\therefore 9_{10} + C6_{16} = 100100001_2 = 256 + 32 + 1 = 289_{10}$$

3.  $12.3125_{10} + 0110_{12Q2}$

$$12.3125_{10} = 11000101_{12Q4}$$

$$\begin{array}{r} 11000101 \\ + 00011000 \\ \hline 11011101 \end{array}$$

$$11011101_{12Q4} = 13.8125_{10}$$

5.  $9_{10} \times 3_{10}$

$$9_{10} = 1001_2 \quad 3_{10} = 0011_2$$

$$\begin{array}{r} 1001 \\ \times 0011 \\ \hline 1001 \\ 1001 \\ \hline 11011 \end{array}$$

$$\therefore 11011_2 = 1 + 2 + 8 + 16 = 27_{10}$$

2.  $118 - 11_{10}$

$$118 = 10011010_2 = 1 + 8 = 9_{10} \checkmark$$

$$\therefore 118 - 11_{10} = 9_{10} - 11_{10} = -2_{10}$$

4.  $5.75_{10} - 7.125_{10}$

$$5.75_{10} = 01011101_{12Q3}$$

$$7.125_{10} = 0111001_{12Q3}$$

$$0111001 \rightarrow 1000110 \rightarrow 1000111$$

$$\begin{array}{r} 0101110 \\ + 1000111 \\ \hline 1110101 \end{array}$$

$$1110101_{12Q3} = 11.735_{10}$$

6.  $(-5)_{10} \times (-6)_{16}$

$$(-5)_{10} = 1011 \quad (-6)_{16} = 1010$$

$$1011 \rightarrow 11011 \quad 1010 \rightarrow 11010$$

$$\begin{array}{r} 11011 \\ \times 11010 \\ \hline 00000000 \\ 11111011 \\ 00000000 \\ 111011 \\ 11011 \\ \hline 101111110 \end{array}$$

$$\therefore 11110_2 = 2 + 4 + 8 = 14_{10}$$

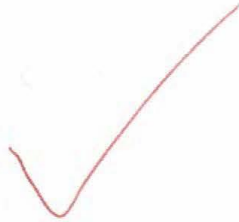
7.  $9.5_{10} \times 2.625_{10}$

$9.5_{10} = 1001100_2 \text{ U4Q3}$

$2.625 = 10101_2 \text{ U2Q3}$

$$\begin{array}{r} 1001100 \\ \times 10101 \\ \hline 1001100 \\ 1001100 \\ 1001100 \\ 1001100 \\ 1001100 \\ \hline 11000111100 \end{array}$$

$\therefore 11000111100 \text{ U5Q6} = \overline{24.9375}_{10}$



8.  $(-1.25)_{10} \cdot 3.5_{10}$

$-1.25_{10} = 111011_2 \text{ I4Q2}$

$3.5_{10} = 001110_2 \text{ I4Q2}$

$$\begin{array}{r} 1110.11 \\ \times 11.10 \\ \hline 11110110 \\ 1111011 \\ 111011 \\ \hline 10010111010 \end{array}$$

$\therefore 10010111010 \text{ I4Q4} = \overline{-4.375}_{10}$

