

1. $9_{10} + 6_{10}$

$$\begin{array}{r} 01011011_{u8} + 11000110_{u8} \\ \hline 01011011 \\ + 11000110 \\ \hline 10010001_{u9} \end{array}$$

$$2^5_{10} + 2^2_{10} + 1_{10} = \boxed{289_{10}}$$

2. $11_8 - 11_{10} = 11_8 + (-11_{10})$

$$|001|001|_{u6} - 001011_{u6} = 00100_{u6} + (110100_{u6} + 1_2)$$

$$\begin{array}{r} 00100_{u6} \\ + 11010_{u6} \\ \hline 11110_{u6} \end{array}$$

$$= -(000010_{u6}) = -(2_{10}) = \boxed{-2_{10}}$$

3. $12.3125_{10} + 0110_{12R2}$

15Q4 should be with 001
is born positive, don't need sign bit

$$11000101_{u4Q4} + 00011000_{u4Q4}$$

$$\begin{array}{r} 11000101_{u4Q4} \\ + 00011000_{u4Q4} \\ \hline 11011101_{u4Q4} \end{array}$$

$$13_{10} \cdot 0.5_{10} + 0.25_{10} + 0.0625_{10} = \boxed{13.8125_{10}}$$

5. $9_{10} \cdot 3_{10}$
 $1001_{u4} \cdot 0011_{u4}$

$$\begin{array}{r} 1001_{u4} \\ \times 0011_{u4} \\ \hline 00001001 \\ 00010010 \\ 00000000 \\ \hline \end{array}$$

$$+ \dots$$

$$00011011_{u8}$$

output will be u8

$$= 1_{10} + 2_{10} + 8_{10} + 16_{10} = \boxed{27_{10}}$$

6. $(-5)_{10} \cdot (-6)_{10}$
 $-(0101)_{u4} \cdot -(0110)_{u4}$

$$(1010_{u4} + 1_2) \cdot (1001_{u4} + 1_2)$$

$$1011_{u4} \cdot 1010_{u4}$$

Needs JS out

$$\begin{array}{r} 1111011_{u4} \\ \times 1111010_{u4} \\ \hline 00000000 \\ 11110110 \\ 11011000 \\ 10110000 \\ 01100000 \\ 11000000 \\ 10000000 \\ \hline 00111110 \end{array}$$

$$= 1011_{10} \cdot 1010_{10}$$

$$= 30 \text{ t}$$

1	0	0	1	1	0	0	0	5484
0	0	1	0	1	1	0	0	5484

35.5625