

1 2 4 8 16 32 64

64
16
8
2
1

Hw 3

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① $91_{10} = 1011011_2$

~~64~~ $16_{16} = 11000110_2$

$$\begin{array}{r} 11000110 \\ 1011011 \\ \hline 100100001_2 = \boxed{289_{10}} \end{array}$$

② $11_{10} = 1011_2$

$11_8 = 1001_2$

$$\begin{array}{r} 10011 \\ - 1011 \\ \hline 11101 \\ - 1101 \\ \hline 10101 \\ - 1001 \\ \hline 0010 \end{array}$$

$$\begin{array}{r} 1011 \\ - 1001 \\ \hline 0010 \end{array}$$

$\cdot (-1) \rightarrow 1100_2$ is 2's complement

$\boxed{-2_{10}}$

0.0625 0.125 0.25 0.5 1 2 4 8 16 32 64

③ $12.3125_{10} = 1100.0101_2$

$0110_{128} = 01.10_2$

$$\begin{array}{r} 1100.0101 \\ 01.10 \\ \hline 1101.1101_2 = \boxed{13.8125_{10}} \end{array}$$

④

$5.75_{10} = 101.11_2$

$7.125 = 111.001_2$

$$\begin{array}{r} 111.001 \\ - 101.110 \\ \hline 001011 \end{array}$$

$= \boxed{-1.375_{10}}$

⑤ $9_{10} = 1001_2$
 $3_{10} = 0011_2$

$$\begin{array}{r} 1001 \cdot 0011 \\ \hline 1001 \\ 0000 \\ 0000 \\ \hline 0011011_2 = \boxed{27_{10}} \\ 16 \quad 8 \quad 11 \end{array}$$

~~⑥ $(-5)_{10} = 1011$ $(-6)_{10} = 1010_2$~~

~~$$\begin{array}{r} 1011 \cdot 1010 \\ \hline 10110 \\ 00000 \\ 1011 \\ \hline 11001110 \\ 00110010 \\ \hline 32 \quad 16 \quad 2 \end{array}$$~~

⑦ $7.5_{10} = 1001.1_2$
 $2.625_{10} = 10.101_2$

$$\begin{array}{r} 1001.1 \cdot 10.101 \\ \hline 10011 \\ 00000 \\ 10011 \\ 00000 \\ \hline 10011 \\ \hline 11000.1111 = \boxed{24.9375_{10}} \\ 16 \quad 8 \quad 5 \quad 2.5 \quad 1.25 \quad 0.625 \quad 0.3125 \quad 0.15625 \end{array}$$

$$\textcircled{f} \quad -1.25_{10} = -001.01_2 \rightarrow 110.11_{10Q_2}$$

$$3.5 = 011.1_{10Q_4}$$

$$011.1 - 110.11$$

$$\begin{array}{r} 0111 \\ \hline \end{array}$$

$$0111$$

$$0000$$

$$0111$$

$$0111$$

$$0111$$

$$0111$$

$$0111$$

$$1111$$

$$11$$

$$\begin{array}{r} 1111101 \\ \hline \end{array}$$

$$= 111011.101_{10Q_3}$$

$$-100.011_2$$

$$=$$

$$\boxed{-4.375_{10}}$$