49.1875 $0.1875 \times 2 = 0.375$ 0 1

49	2	1
24	2	0
12	2	0
6	2	0
3	2	1
1	2	1
0		

$0.375 \times 2 = 0.75$ 0
$0.75 \times 2 = 1.5$ 1
$0.5 \times 2 = 1.0$ 1

$49.1875_{10} = 110001.0011_2 = 0.110010011 \times 2^6$

$0011\,0001.0011$
  3 1 . 3_{16}

$110\,001.001\,100$
 6 1 . 1 4_8

$0.1100\,0010\,/\,0110\,0000\,/\,0000\,0000\,/\,0000\,0110$
 6 2 6 0 0 0 0 6

Negative $00\,110001\,0011$
             $11\,001110.\,1100$
                 $+1$

$-49.1875_{10} = 11001110.1101 \quad -0.110011101101 \times 2^8$

$1100\,1110\,1101$ $011001110.\,110100$
 C E D_{16} 3 1 0 . 6 4_8

$0.1\,100\,111/01101\,000/0\,0000\,000/0000\,1000$
 6 7 6 8 0 0 0 8

3.07421875

3 | 2 1   .07421875 × 2 = 0.1484375   0
1 | 2 1   0.1484375 × 2 = 0.296875   0
0   .296875 × 2 = .59375   0
                 .59375   × 2 = 1.1875   1
                 .1875   × 2 = .375   0
                 .375   × 2 = 0.75   0
                 .75   × 2 = 1.5   1
                 .5   × 2 = 1.0   1

$3.07421875 = 11.00010011_2 = 0.110001011 \times 2$

$\underline{0011}.\underline{000}\underline{10011}$ $\underline{011}.\underline{000}\ \underline{100}\ \underline{110}$

   3 . 1   3$_{16}$ 3 . 0   4   6$_8$

$\underline{0.11}\ \underline{0000}\ \underline{10}$ / $\underline{0110}\ \underline{0000}$ / $\underline{00000}\ \underline{000}$ / $\underline{00000010}$

   6   2   6   0   0   0   0   2

Negative

0011.00010011
1100.11101100

        +1

$1100.11101101 = 0.110011101101 \times 2^4$

$\underline{1100}\ \underline{11101101}$ $\underline{001100}.\ \underline{111}\ \underline{011}\ \underline{010}$

   C . E   D$_{16}$ 1 4 . 7   3   2$_8$

$\underline{0.11}\ \underline{0011}\ \underline{1}$ / $\underline{0}\ \underline{1101}\ \underline{000}$ / $\underline{000000}\ \underline{00}$ / $\underline{00000100}$

   6   7   6   8   0   0   0   4

0.2

$0.2 \times 2 = 0.4 \quad 0$

$0.4 \times 2 = 0.8 \quad 0$

$0.8 \times 2 = 1.6 \quad 1$

$0.6 \times 2 = 1.2 \quad 1$

$0.2 \times 2 = 0.4 \quad 0$

$0.2_{10} = 0.\underline{0011}_2 = 0.11_2 \times 2^{-2} \quad 2 \quad 0000\,0010$

$$\begin{array}{r} 1111\,1101 \\ +\qquad\qquad 1 \\ \hline 1111\,1110 \end{array}$$

$0.\underline{0011} \qquad\qquad 0.\underline{0011}\underline{0011}\underline{0011}\,\underline{0011}$

$0.\underline{3}_{16} \qquad\qquad 0.\;1\;\;4\;\;6\;\;3\;\;1_8$

Negative

$0.0011\,0011\,0011\,0011\,0011\,0011$

$1100\,1100\;1100\,1100\;1100\,1100$

$+1$

$0.1100\,1100\;110\,01100\,1100\;1101 \times 2^0$

$0.\;C\;\;C\;\;C\;\;C\;\;C\;\;D_{16}$

$0.\;110\;011\;001\;100\;110\;011\;001\;101$

$0.\;6\;\;3\;\;1\;\;4\;\;6\;\;3\;\;1\;\;5_8 \qquad \underset{\Downarrow}{\underline{01}}\ \text{roundup}$

$0.1100\,110\,|\,0110\,0110\,|\,0110\,0\,111\,|\,0000\,0000$

$\quad 6 \qquad 6 \qquad 6 \qquad 6 \qquad 6 \qquad 7 \qquad 0 \qquad 0$

69999902

0.110 1001 | 1001 1001 | 1001 1001 | 0000 0010

6   9   9   9   9   9   0   2

0.1101001×2^2

$11.01001_2 = 2^1 + 2^0 + 2^{-2} + 2^{-5} + 2^{-6} + 2^{-9} \ldots$

$= 3.299_{10}$

69999903

0.1 101 001 | 1001 1001 | 1001 1001 | 0000 0011

6   9   9   9   9   9   0   3

$0.110 1001 1001 \times 2^3$

$110.10011001_2 = 2^2 + 2^1 + 2^{-1} + 2^{-4} + 2^{-5} + 2^{-8} \ldots$

$= 6.5999_{10}$

966667FF

1.0010 110 | 0110 0110 | 0110 0111 | 1111 1111

9   6   6   6   6   7   F   F

                             1111 1111

$1.00 10 110 0 1100 1100 1100 111 \times 2^{-1}$ -1

$0.100 10110 0 1100 1100 1100 111$ 1111 1110

$= 2^{-1} + 2^{-4} + 2^{-6} + 2^{-4} + 2^{-10} + 2^{-11} \ldots$ $00000001 = 2^{-7}$

≈ 0.5875