

49.1875, 3.07421875, 0.2

binary, octal, hex

49.1875 $\begin{array}{r} 3 \\ \text{R1} \end{array}$ $\begin{array}{r} 0 \\ \text{R3} \end{array}$

a) hex: $\begin{array}{r} 16 \overline{) 549} \\ -48 \\ \hline 1 \end{array}$ $0.1875 \cdot 16 = 3$

$$49.1875_{10} = 31.3_{16}$$

binary: 3 | . 3

0011 0001 . 0011

$$49.1875_{10} = 00110001.0011_2$$

octal $\boxed{110}\boxed{001} . \boxed{001}\boxed{100}_2$

6 1 , 1 4

$$49.1875_{10} = 61.14_8$$

11000.0011 6 = 0000110

Nasa format 01100010011000000000000000000110

b) Nasa format negative

011000100110000000000000

10011101100111111111

+
10011101101000000000000

-49.1875₁₀ in Nasa format 10011101101000000000000000000110

3.07421875
a) hex

$$\begin{array}{r} 0.07421875 \times 16 = 1.1875 \\ 16 \overline{)3} \\ 0.1875 \times 16 = 3 \end{array}$$

$$3.07421875_{10} = 3,13_{16}$$

binary 3. | 3

001, 0001 001

$$3.07421875_{10} = 11.00010011_2$$

Octal 
 3. 0 4 6,

$$3.07481875_{12} = 3,046,$$

Nasa format 11.00010011₂ 2 = 0000010

6) Nasa format negative

$$\begin{array}{r} 011000100110000000000000 \\ 1001110110011111111111 \\ + \qquad \qquad \qquad | \\ \hline 100111011010000000000000 \end{array}$$

0.2

a) hex

$$0.2 \cdot 16 = 3.2$$

$$0.2 \cdot 6 = 3.2$$

$$0.\underline{2}_{10} = 0.\overline{333}_{16}$$

binary

0 3 3 3

0.001100110011

Octa |

0.00001001

0 : 1 4 6 3

$$0.2_{10} = 0.\overline{1463}$$

Nasa Format

0.001100110011

$\gamma = 00000010$

111101

+ 1

1111110

0.2₁₀ in base format

0 100100100|10 01001011110

→

b) Negative

0110011001110011001100110

7

11

$\sim 0.2_{10}$ in hasa format 10011001100110011010111110

1 2 3 4 5 6 7 8 9

Answer to part C on
next page

c) 69949902 Nasa to Decimal

6 9 9 9 9 9 0 2
01101001 (001) 001 1001 1001 00000010
i 2 2

$$\begin{array}{r} \text{Binary: } 11.01001100110011001100 \\ 2^1 + 2^0 \quad 2^{-2} + 2^{-5} 2^{-6} + 2^{-9} 2^{-10} + 2^{-13} 2^{-14} 2^{-17} 2^{-18} + 2^{-21} \\ 3 + 0.299999714 \\ \hline 3.299999714 \end{array}$$

69 9999 03 Nasa to decimal

6 9 9 9 9 9 0 3
011010011001100100110010000001
in 3

$$\begin{aligned} \text{Binary: } & 110.1001001001001001 \\ & 2^2 + 2^1 2^{-1} + 2^{-4} + 2^{-5} + 2^{-8} + 2^{-9} + 2^{-12} + 2^{-13} + 2^{-16} + 2^{-17} + 2^{-20} \\ & 6 + 0.599999428 \end{aligned}$$

966667FF Nasa to decimal

negative (0001 0110 0110 0110 0110 0111 1111 1111 -)
- 1001 0110 0110 0110 0110 0110
- 0110 1001 1001 1001 1001 1001

$$\text{binary} = 0.01101001100100110011001$$
$$= 2^{-2} + 2^{-3} + 2^{-5} + 2^{-4} + 2^{-9} + 2^{-12} + 2^{-13} + 2^{-16} + 2^{-17} + 2^{-20} + 2^{-21} + 2^{-24}$$
$$= 0.41124444464$$