

# Problem #6 Conversions

a)  $3.75_{10}$ , b)  $0.7_{10}$ , c)  $89.9_{10}$

$$1. \ 3.75_{10}$$

$$0.75 \times 2 = 1.5$$

$$0.5 \times 2 = 1.0$$

$$= 11.11_2$$

$$11.11_2 = 3.C_{16}$$

$$11.11_2 = 3.6_8$$

$$0.7 \times 2 = 1.4 \times 2 = 2.8$$

$$0.8 \times 2 = 1.6 \times 2 = 3.2$$

$$0.2 \times 2 = 0.4 \times 2 = 0.8$$

$$= 0.10110_2$$

$$0.10110_2 = 0.B3_{16}$$

$$0.10110_2 = 0.54631_2$$

$$89.9_{10} \rightarrow 0.9 \times 2 = 1.8 \times 2 = 3.6$$

$$0.6 \times 2 = 1.2 \times 2 = 2.4$$

$$0.4 \times 2 = 0.8 \times 2 = 1.6$$

$$= 1011001.1110110_2$$

$$= 59.E6_{16}$$

$$= 131.73146_8$$

2.

a)  $3.75_{10}$   
 $0.1111_2 \times 2^2$

$$0111 \ 1000 \ 0000 \ 0000 \ 0000 \ 0000 \ 0010$$

$$7 \ 8 \ 0 \ 0 \ 0 \ 0 \ 2_{16}$$

b)  $0.7_{10}$   
 $0.10110_2$

$$0101 \ 1001 \ 1001 \ 1001 \ 1001 \ 1000 \ 0000 \ 0000$$

$$5 \ 9 \ 9 \ 9 \ 9 \ A \ 0 \ 0_{16}$$

c)  $89.9_{10}$   
 $0.1011001110110_2 \times 2^2$

$$0101 \ 1001 \ 1110 \ 1100 \ 1100 \ 1101 \ 0000 \ 0111$$

$$5 \ 9 \ E \ C \ C \ D \ 0 \ 7_{16}$$

5.  
a)  $1.111_2 \times 2^1$

$$0100 \ 0000 \ 0111 \ 0000 \ 0000 \ 0000 \ 0000 \ 0000$$

$$4 \ 0 \ 7 \ 0 \ 0 \ 0 \ 0 \ 0_{16}$$

b)  $1.0110_2 \times 2^{-1}$

$$0011 \ 1111 \ 1011 \ 0011 \ 0011 \ 0011 \ 0011 \ 0011$$

$$3 \ F \ B \ 3 \ 3 \ 3 \ 3 \ 3_{16}$$

c)  $1.011001110110_2 \times 2^1$

$$0100 \ 0000 \ 0011 \ 0011 \ 1101 \ 1001 \ 1001 \ 1010$$

$$4 \ 0 \ 3 \ 3 \ D \ 9 \ 9 \ A_{16}$$