

COMPARCH - HW #3 Jay Woo

$$1 \quad 91_{10} = 64_{10} + 16_{10} + 8_{10} + 2_{10} + 1_{10} = 0101101_{10}$$

$$c6_{16} = \frac{11000110_{10}}{c_{16} = 12_{10} \quad b_{16}}$$

$$\begin{array}{r} 0101101_{10} \\ + 11000110_{10} \\ \hline \end{array}$$

$$100100001_{10} = 1_{10} + 32_{10} + 256_{10} = \boxed{287_{10}}$$

$$2 \quad 11_8 = \overbrace{00}^{1_8} \overbrace{00}^{1_8} 1_{16} = 01001_{15}$$

$$11_{10} = 8_{10} + 2_{10} + 1_{10} = 01011_{15}, \quad -11_{10} = 10101_{15}$$

$$\begin{array}{r} 01001_{15} \\ + 10101_{15} \\ \hline \end{array}$$

$$11110_{15} = -00010_{15} = \boxed{-2_{10}}$$

$$3 \quad 12.3125_{10} = 8_{10} + 4_{10} + \frac{1}{4}_{10} + \frac{1}{16}_{10} = 11000101_{10}$$

$$0110_{1282} = 0001000_{10}$$

17
0.25

$$\begin{array}{r} 11000101_{10} \\ + 0001000_{10} \\ \hline \end{array}$$

$$11011101_{10}$$

$$= 8_{10} + 4_{10} + 1_{10} + 0.5_{10} + 0.25_{10} + 0.0625_{10} = \boxed{13.8125_{10}}$$

$$4 \quad 5.75_{10} = 4_{10} + 1_{10} + 0.5_{10} + 0.25_{10} = 0101.11_{10} - 0101.110_{10}$$

$$7.125_{10} = 4_{10} + 2_{10} + 1_{10} + 0.125_{10} = 0111.001_{10} - 7.125_{10} = 1000.111_{10}$$

$$\begin{array}{r} 0101.11_{10} \\ + 1000.111_{10} \\ \hline \end{array}$$

$$1110.101_{10}$$

$$= -0001011_{10} = -(1_{10} + 0.25_{10} + 0.125_{10}) = \boxed{-1.375_{10}}$$

$$5_{10} = 1001_{41}$$

$$3_{10} = 0011_{41}$$

$$\begin{array}{r} 1001 \\ \times 0011 \\ \hline 1001 \\ 1001 \\ \hline \end{array}$$

$$00011011_{10} = 16_{10} + 8_{10} + 2_{10} + 1_{10} = \boxed{27_{10}}$$

$$5_{10} = 0101_{14}, -5_{10} = 1011_{14}$$

$$6_{10} = 0110_{14}, -6_{10} = 1010_{14}$$

$$\begin{array}{r} 1011_{14} \\ \times 1010_{14} \\ \hline 0000 \\ 0011 \\ 0000 \\ 1011 \\ \hline 1011 \\ 1011 \\ \hline 11000001110_{18} \end{array}$$

$$00011110_{18}$$

$$= 16_{10} + 8_{10} + 4_{10} + 2_{10}$$

$$= \boxed{30_{10}}$$

$$7 \quad 9.5_{10} = 8_{10} + 1_{10} + 0.5_{10} = 1001_{41} = 1001100_{413}$$

$$2.625_{10} = 2 + 0.5 + 0.125_{10} = 10101_{423} = 0010101_{413}$$

$$\begin{array}{r} 1001100_{413} \\ \times 0010101_{413} \\ \hline 1001100 \\ 0000000 \\ 0000000 \\ 1001100 \\ 0000000 \\ \hline 10011100 \end{array}$$

$$\begin{array}{r} .875 \\ .0625 \\ \hline .9375 \end{array}$$

$$0001100011110_{10} = 16_{10} + 8_{10} + 0.5_{10} + 0.25_{10} + 0.125_{10} + 0.0625_{10} = \boxed{24.9375_{10}}$$

$$8 \quad 1.25_{10} = 101_{112}, -1.25_{10} = 1011_{122} = 11011_{132}$$

$$3.5_{10} = 111_{121} = 01110_{132}$$

$$\begin{array}{r} 11011_{132} \\ \times 01110_{132} \\ \hline 000000000000_{161} \\ 1111110110_{161} \\ 1111101100_{161} \\ 1111011000_{161} \\ 0000000000_{161} \\ \hline 1110111010_{161} \end{array}$$

$$(11)1110111010_{161} = -0001000110_{161} = -(4_{10} + 0.25_{10} + 0.125_{10})$$

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