

Rocco DiVenti

Comp Arch HW 3

1. $9_{16} + 66_{16}$
all unsigned

$$01011011_2 + 11000110_2$$

$$\begin{array}{r} 01011011 \\ + 11000110 \\ \hline 100100001_2 \end{array}$$

289

2. $11_8 - 11_{10}$

$$1001_2 - 1011_2$$

add sign bit and convert to 2's complement

$$01001_2 + 10101_2$$

$$\begin{array}{r} 01001_2 \\ + 10101_2 \\ \hline 11110_2 \end{array}$$

$$-00010$$

-2

3. $12.3125_{10} + 0110_{12}$

$$11000101_{16} + 0110_{12}$$

$$\begin{array}{r} 11000101_{16} \\ + 0001.1000_{12} \\ \hline 1101.1101_{16} \end{array}$$

13 $\frac{3}{16}$ 10

4. $5.75_{10} + (-7.125_{10})$

$$10111_{13} + (-111001_{13})$$

$$0101110_{14} + 1000111_{14}$$

$$\begin{array}{r} 0101110_{14} \\ + 1000111_{14} \\ \hline 1110101_{14} \end{array}$$

$$\begin{array}{r} 0001011_{14} \\ - 1.375_{10} \end{array}$$

5. $9_{10} \cdot 3_{10}$

$$1001_2 \cdot 0011_2$$

$$\begin{array}{r} 01001_2 \\ 10010_2 \\ \hline 11011_2 \end{array}$$

27₁₀

$$6. (-5_{10}) \cdot (-6_{16})$$

$$(-101_2) \cdot (-110_2)$$

$$1011_{16} \cdot 1010_{16}$$

$$\begin{array}{r} 1011_{16} \\ \times 1010_{16} \\ \hline 11110110_{16} \\ 11011000_{16} \\ 01100000_{16} \\ 10000000_{16} \\ \hline 00011110_{16} \end{array}$$

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

$$7. 9.5_{10} \cdot 2.625_{10}$$

$$100110010103 \cdot 001010101043$$

$$\begin{array}{r} 1001100 \\ \times 0010101 \\ \hline 100110000 \\ 10011000000 \\ \hline 000110001111001000_{16} \end{array}$$

$$\boxed{24^{5/16}_{10}}$$

$$8. (-1.25_{10}) \cdot (3.5_{10})$$

$$(-0101_{16}02) \cdot (0111_{16}0301)$$

$$(11011_{16}0302) \cdot (01110_{16}0302)$$

$$\begin{array}{r} 11011 \\ \times 01110 \\ \hline 1111110110 \\ 1111101100 \\ 1111011000 \\ \hline 11101110101604 \\ - (00100.0110)_{16}04 \\ \hline \end{array}$$

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