

Number Systems Review

Show all work for all questions unless otherwise noted.

1. Convert as indicated:

a) 1101_2 to decimal

b) 1111010_2 to decimal

c) 37_{10} to binary

d) 243_{10} to binary

e) 11110010_2 to hexadecimal

f) 11101010_2 to octal

g) 1001110011110010_2 to hexadecimal

h) $BE3C_{16}$ to binary

i) $ACED_{16}$ to octal

j) 111.1011_2 to decimal

k) 1010.0011_2 to decimal

l) 14.125 to binary

m) 4.9_{10} to binary

n) 7.75_{10} to binary

2. Complete the table below. No need to show work.

Binary	Octal	Decimal	Hexadecimal
1001001101110			
	304		
		91	
			C0B

3. Perform the following tabular addition:

a) **Binary**
 1100111
 + 0110110

b) **Hex**
 4E23
 + 5542

c) $1001101_2 + 0010010_2$

d) $1000111_2 + 10110_2 + 10111_2$

e) $437_8 + 4AF_{16}$

f) $F2A3_{16} + 10011010_2 + 342_8$

4. Subtract each pair of numbers below in binary using two's complement:

- (i) first converting the numbers to binary
- (ii) making appropriate conversions
- (iii) determining the answer
- (iv) checking your result

a) $14 - 34$

b) $29 - 22$

c) $16 - 46$

d) $37 - 30$

e) $-70 + 58$

f) $88 - 68$