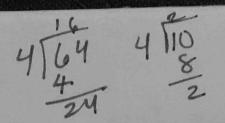
2.1 Bits & Groups of Bits C/C++ Ox prefix means the # is expressed in hexadecimal 10 11 12 13 14 15 ABCDEF Exercises 1. Binary to hex 23 222 20 8421 a) 0100 0101 0110 0111 = 4564 b) 1000 1001 1010 1011 = 89AB 9 A e) 1111 1110 1101 11002 = FEDCIL d) 0000 0010 0101 00102 = .025216 2. How many bits are represented by the following? a) feff fff -> 32 bits b) 7 fff 5867 defon = 48 each is 12\*4=48 euch is 8 # 4 = 32 4 bits 1 c) 11112 = 4 bits d) 11111 = 16 bits each is 1#4=4 each :> 4\* 4= 16 167,



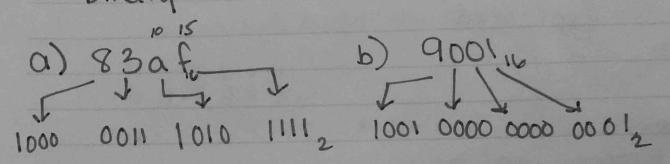
2. Express the following bit patterns in binary

F

F

E

T



4. How many hexadecimal digits are regid to rep each of the following?

a) 8 bits > 2 b) 32 + 8

c) 64 bits > 16 d) 10 bits > 3

e) 20 bits > 5 f) 7 bits > 2

23 Modromesical Equisions of Emony or reconst Diselease MONESEE DOOR AN the Estimate are the solution of 1, 10, 3 coch di for the following? 6) 2245 8254 r= 10, n=8 b1=2, d6=9, d5=4, d4=5, d3=8, dz=2, d,=5, do=4 3) 2942 8524 5= 10, 0= 8 dy = 2, dx = 9, dx = 4, dx = 5, dx = 8, \$2=2, d,=5, d,=4 2 1010000 = 128+32+4+1 = 185

3. Convert the following 8-bit binary numbers to decimal by hand: 128 643216 8421

L

T

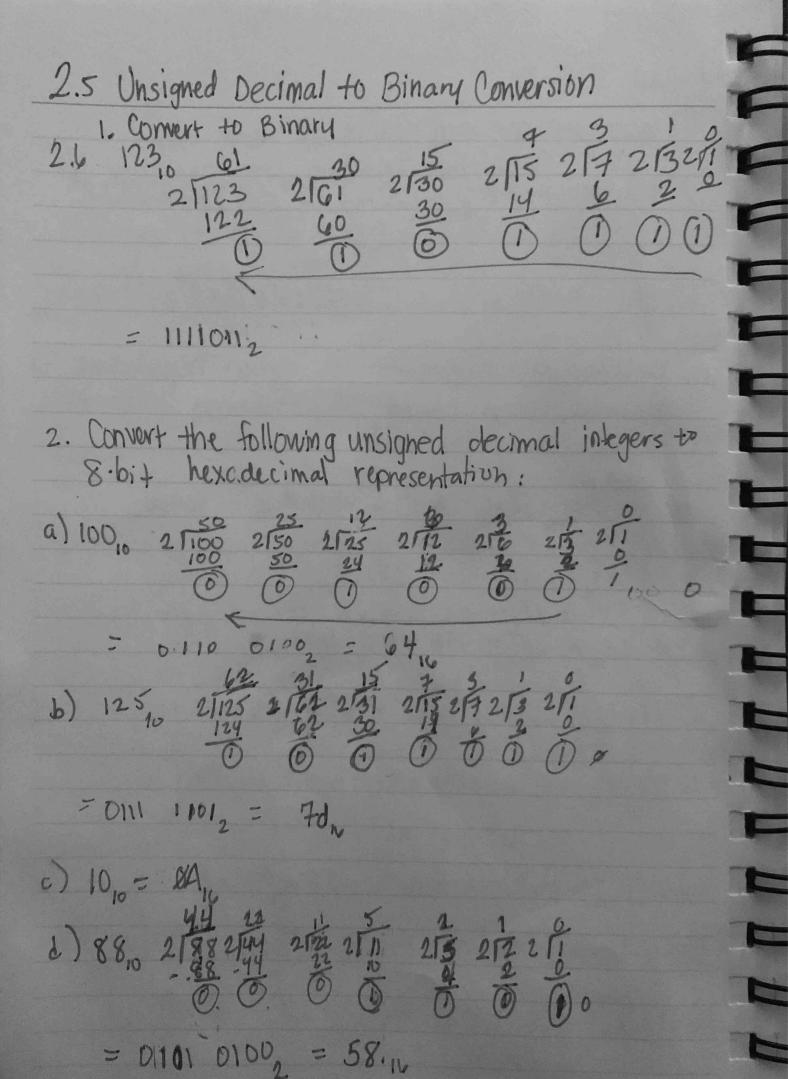
- = 128+32+8+2 = 170,0 0)101010102
- = G4+16+4+1= 8510 b) 0101 0101 2
- 128+64+32+16 = 240 c) 1111 0000 2 = OR 255 - 15 = 240,0
- d') 0000 1111 = 15,0
- e) 1000 0000 = 128,0
- f) 011000112 = 64+32+2+1=99,0
- 9) 011110112 = 255-128-4=123,01
- h) 1111 11112 = 25510
- b) 00010010 0011 0100 = 212+29+25+24+22= 4660,0
- 0) 1111 1110 1101 1100 = (211-1) -2 = 25-2'-2'=6524410
- d) 0000 8111 1101 11112 = (255-25) +28+29 +280= 201510 e) 1000 0000 0000 00002 = 215 = 3276816

9) 0111 1011 1010 1010 
$$z = (2^{16}-1) - 2^{15} - 2^{10} - 2^{6} - 2^{4} - 2^{2} - 2^{0}$$

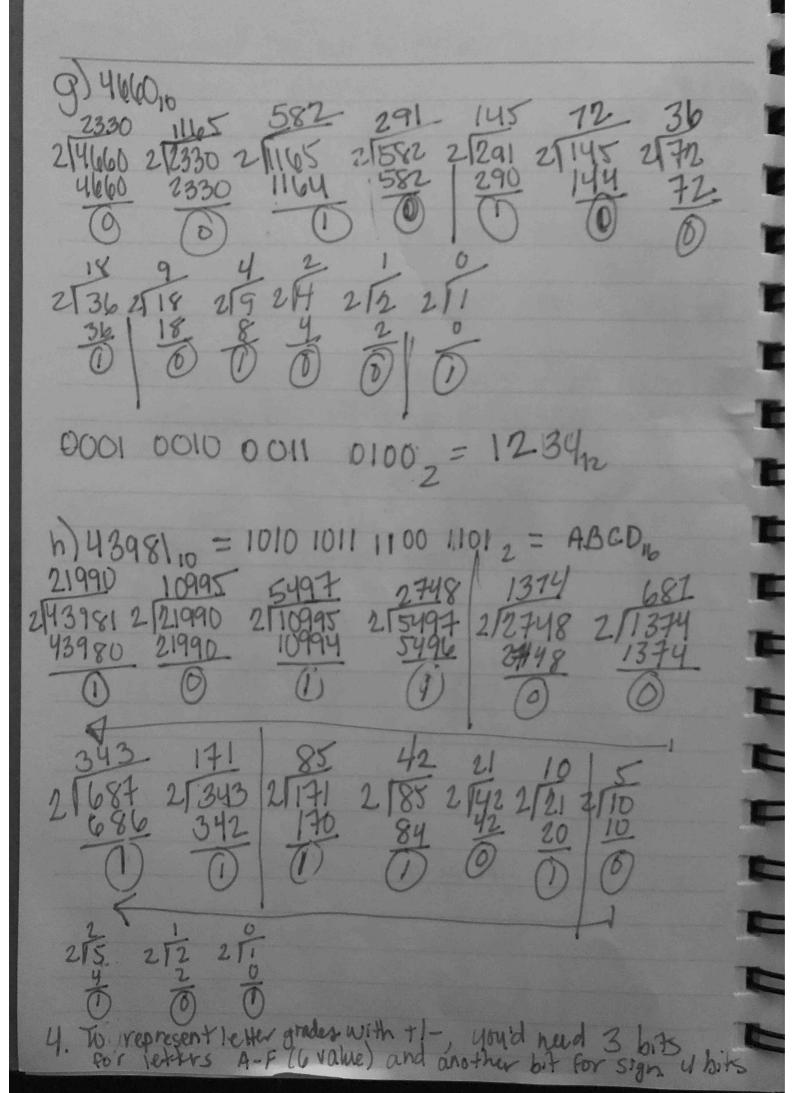
$$= 31658_{10}$$

5. Develop an algorithm to convert hexadecimal to decimal, then convert the following 16 bit #5 to decimal by hand.

a) abboto = 163 \* 10 = 4096 \* 10 = 409600



3. Convert the following unsigned decimal integers to lebit hexadecimal representation:



2.8 Exercises 1. Say you want to allocate an area in memory for Storing any # in the range 0- 4,000,000,000, This memory area will Start at 2fffe 696. Give the addresses of each byte of memory that will ber required: ×(8 bits) We need 32 bits (232 4294967296) in order to store 4,000,000,001 distinct values. This is equivalent to 4 bytes. If the first address begins at 2 fffeb96, the Other three addresses are: zffeb97 2fffeb98 28866699 2. You need to allocate an area in memory for Storing an array of 30 bytes. The first byte will have the value of solder. The memory are will bart at location solder. Show what the Memory area looks like value address value 90: 610180 001013:05 00100e:00 881814:86 00181a: 00c 00100f: 01 881815:07 801816:0d 001010:02 condic: de 80:01016:08 over 08101d:0f 001011:03 801817:89

001018:00

001012:84

100101e:10

2. contide address: value 88181f: 11 881828: 12 881821: 13 881822: 14

3.

If the 11th address in hexadecimal is \$88000000f, the 14th is \$80000000.

881823:15 881824:16 881825:17 881826:18

001027:19 001028:14

001029:18

00102A:1C.

00102B:10.