1. a. 101010  
0 x 2 + 1 = 1  
1 x 2 + 0 = 2  
2 x 2 + 1 = 5  
5 x 2 + 0 = 10  
10 x 2 + 1 = 21  
21 x 2 + 0 = 42  
b. 100001  
0 x 2 + 1 = 1  
1 x 2 + 0 = 2  
2 x 2 + 0 = 4  
4 x 2 + 0 = 8  
8 x 2 + 0 = 16  
16 x 2 + 1 = 33  
c. 10111  
0 x 2 + 1 = 1  
1 x 2 + 0 = 2  
2 x 2 + 1 = 5  
5 x 2 + 1 = 11  
11 x 2 + 1 = 23  
d. 0110  
0 x 2 + 1 = 1  
1 x 2 + 1 = 3  
3 x 2 + 0 = 6  
*^ Be careful with above example.. You drop the initial ‘0’ in this method of calculation.*  
e. 11111  
0 x 2 + 1 = 1  
1 x 2 + 1 = 3  
3 x 2 + 1 = 7  
7 x 2 + 1 = 15  
15 x 2 + 1 = 31

2. a. 32  
1 (0) (32-32)  
0 (0) (16)  
0 (0) (8)  
0 (0) (4)  
0 (0) (2)  
0 (0) (1)  
b. 64  
1 (0) (64-64)  
0 (0) (32)  
0 (0) (16)  
0 (0) (8)  
0 (0) (4)  
0 (0) (2)  
0 (0) (1)  
c. 96  
1 (32) (96-64)  
1 (0) (32-32)  
0 (0) (16)  
0 (0) (8)  
0 (0) (4)  
0 (0) (2)  
0 (0) (1)  
d. 15  
1 (7) (15-8)  
1 (3) (7-4)  
1 (1) (3-2)  
1 (0) (1-1)  
e. 27  
1 (11) (27-16)  
1 (3) (11-8)  
0 (3) (4)  
1 (1) (3-2)  
1 (0) (1-1)

3. a. 11.01  
0 x 2 + 1 = 1  
1 x 2 + 1 = 3.25  
b. 101.111  
*0 x 2 + 1 = 1  
1 x 2 + 0 = 2  
2 x 2 + 1 = 5.875*  
c. 10.1  
0 x 2 + 1 = 1  
1 x 2 + 0 = 2.5  
d. 110.011  
0 x 2 + 1 = 1  
1 x 2 + 1 = 3  
3 x 2 + 0 = 6.375  
e. 0.101 = 0.625  
*^ These are worked out by working across from the decimal, first place holder is 0.5, then 0.25 then 0.125 and so forth, add together the values represented by 1 and you have the value of the base 10 number past the decimal.*

4. a. 4 ½  
1 (0) (4-4)  
0 (0) (2)  
0 (0) (1)  
= 100.1  
b. 2  
1 (0) (2-2)  
0 (0) (1)  
c. 1 1/8  
1 (0) (1-1)  
= 1.001  
d. 5 1/16  
1 (1) (5-4)  
0 (1) (2)  
1 (0) (1-1)  
= 101.0001  
e. 5 5/8  
1 (1) (5-4)  
0 (1) (2)  
1 (0) (1-1)   
= 101.101  
5.  *Answers written in note book.*