

1. (4 points) Fill in the missing values in this table. Recall that Decimal numbers are just plain old every day base-10 numbers, and Binary numbers are base-2 numbers containing only 0's and 1's.

Decimal	8-bit Binary
40	00101000
209	11010001
37	00100101
91	01011011

$$2^3 + 2^5 = 8 + 32 = 40$$

$$1 + 2^4 + 2^6 + 2^7 = 1 + 16 + 64 + 128 = 209$$

$$= 1 + 80 + 128 = 209$$

2. (4 points) Fill in the missing values in this table. Recall that Hexadecimal Numbers are base-16 numbers that include A through F as digits.

2-digit Hexadecimal	8-bit Binary
21	00100001
CF	11001111
B6	10110110
1E	00011110

$$1 + 2^5 = 33$$

$$\begin{array}{r} 33 \\ -15 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 2140 \\ -271 \\ \hline 2131 \\ -11 \\ \hline 11 \end{array}$$

A 10 2111

B 11 2151

 2160

 11

 2160

 2131

 11

$2^3 2^2 = 8 + 4 = 12$

3. (2 points) Given the 4-bit mask of 0111, mask the following 4-bit numbers (perform bitwise AND):

1111	0011	1010	1100
0111	0011	0010	0100