Answer Key

1. a. $\{0, 1, 2, 3, 4, 5, 6, 7\}$
   b. $\{0, 1\}$

2. a.

10^1	10^0
1	9

   b.

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
0	0	1	0	1	1	0	1

   c.

16^5	16^4	16^3	16^2	16^1	16^0
F	F	A	A	6	6

3. a. Convert $(35)_{10}$ to binary (base-2) $n = 35$, $b = 2$
   $35/2 = 17 + 1/2$ $(a/b = q + r/b)$ $q = 17$, $r = 1$
   $17/2 = 8 + 1/2$ $q = 8$, $r = 1$
   $8/2 = 4 + 0/2$ $q = 4$, $r = 0$
   $4/2 = 2 + 0/2$ $q = 2$, $r = 0$
   $2/2 = 1 + 0/2$ $q = 1$, $r = 0$
   $1/2 = 0 + 1/2$ $q = 0$, $r = 1$
   n = 0
   = 0010 0011

   b. Convert $(125)_{10}$ to binary (base-2) $n = 125$, $b = 2$
   $125/2 = 62 + 1/2$ $(a/b = q + r/b)$ $q = 62$, $r = 1$
   $62/2 = 31 + 0/2$ $q = 31$, $r = 0$
   $31/2 = 15 + 1/2$ $q = 15$, $r = 1$
   $15/2 = 7 + 1/2$ $q = 7$, $r = 1$
   $7/2 = 3 + 1/2$ $q = 3$, $r = 1$
   $3/2 = 1 + 1/2$ $q = 1$, $r = 1$
   $1/2 = 0 + 1/2$ $q = 0$, $r = 1$
   n = 0
   = 0111 1101

4. a. Convert $(1F0B)_{16}$ to binary:
   1 = 0001 F = 1111 0 = 0000 B = 1011

   = 0001 1111 0000 1011

   b. Convert $(0100\ 0110)_2$ to hexadecimal:
   0100 = 4 0110 = 6

   = 46