1. (a) (3 points) Through a digital communication channel you have received the following information in hexadecimal format:

   0x002E 61A7 E82F

   How many bits of information have been transmitted?

   Solution: There are 12 hex digits, each hex digit contains 4 bits, in total 48 bits

   Using the table below, for each byte enter the corresponding binary information:

Hex	Binary							
0x00	0	0	0	0	0	0	0	0
0x2E	0	0	1	0	1	1	1	0
0x61	0	1	1	0	0	0	0	1
0xA7	1	0	1	0	0	1	1	1
0xE8	1	1	1	0	1	0	0	0
0x2F	0	0	1	0	1	1	1	1

   (b) (2 points) How can you express decimal 171 and -40 using two's complement binary representation?

   Solution: 171 == `0 1010 1011`

   Note that you have to have a leading zero, otherwise it would be a negative number (twos complement -85). Any number of leading zeroes is fine, but there should be at least one.
   -40 == `101 1000`

   Similarly you need to have at least one leading '1' here as well.