2. (50 points) **Arithmetic on an 8-bit processor.** We have a really $#!tty 8-bit processor that only has an adder and a bit shifter. It has no ability to perform multiplication or division. We need to compute $(77_{10} - 22_{10}) \times 2$ using only addition and bit shifts.

   (a) (15 points) First we're going to calculate the 2's complement representation of -22. In the box below, write out the binary representation of $+22$, then take its two's complement. Also convert the binary to hex in the boxes at right.

	Binary								Hex
$+22$									0x
1's(22)									0x
2's(22)									0x

   (b) (15 points) Now add the two's complement of 22 to 77. The result should be the same as 77-22.

	Binary								Hex
2's(22)									0x
77_{10}									0x
2's(22) + 77_{10}									0x

   (c) (10 points) Now multiply the result of the addition from part 2(b) by 2 using a bit shift.

	Binary								Hex
2's(22) + $77_{10} \times 2$									0x

   (d) (10 points) Convert the result from part 2(c) to **decimal**.