1. The bytes respectfully correspond to the base-10 integers 104, 105, 33, 97, 108, 108, 224, 33 which spell out the phrase (case-sensitive) **"hi!allô!"**.

2. To calculate the unsigned base-10 representation of 11110100, we multiply the figure in each position k by 2^{k-1} and sum them all to get $(1 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^2) = (-1) \cdot (128 + 64 + 32 + 16 + 4) = \mathbf{224}$. To get the signed base-10 representation of x we calculate the base-10 numeral based on the first 7 figures, and if the most significant figure is equal to 1 then we know the base-10 numeral is negative and if it is equal to 0 then we know the base-10 numeral is positive. Thus, the signed base-10 representation of 11110100 is equal to $(-1)\cdot(1\cdot2^6+1\cdot2^5+1\cdot2^4+1\cdot2^2) = (-1)\cdot(64+32+16+4) = (-1)\cdot(116) = \mathbf{-116}$.

3. To convert back from the two's compliment representation of x– 11110100– we will convert take all 0s and replace them by 1s and vise versa, then we will subtract 1 from that number, and finally convert to base-10:

$$11110100\text{'s compliment} = 00001011 \rightarrow 00001011 - 1 = 00001010 = 20_{10}$$

4. The calculation as defined by the homework is given below:

$(-1)^1 \cdot 1110100001_2 \cdot 2^{00001_2} = (-1)\cdot(1\cdot2^9+1\cdot2^8+1\cdot2^7+1\cdot2^5+1\cdot2^0)\cdot(1\cdot2^{1\cdot2^0}) = (-1) \cdot (512 + 256 + 128 + 32 + 1) \cdot 2^1 = (-1) \cdot 929 \cdot 2 = -1858 = \mathbf{-1.858 \cdot 10^3}$

5.
$$\begin{array}{r} 11010000 \\ \text{- - - - - - - -} \\ 01101000 \\ +01101001 \\ \hline 11110001 \end{array}$$

6.
$$\begin{array}{rr} & 01101001 \\ \times & 01101000 \\ \hline + & 00000000 \\ + & 000000000 \\ + & 0000000000 \\ + & 01101001000 \\ + & 000000000000 \\ + & 0110100100000 \\ + & 01101001000000 \\ + & 000000000000000 \\ \hline + & 010101010101000 \end{array}$$