

1. $100010 = 2^5 + 2 = 34$ $100101 = 2^5 + 2^2 + 1 = 37$
 $101010 = 2^5 + 2^3 + 2 = 42$ $110110 = 2^5 + 2^4 + 2^2 + 2 = 54$
 $1100011 = 2^6 + 2^5 + 2 + 1 = 99$ $11110010 = 2^7 + 2^6 + 2^5 + 2^4 + 2 = 242$
 $11111101 = 2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 1 = 253$
 $11111111 = 2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2 + 1 = 255$
2. $0.75 = 0.11$
 $0.646 = 0.10100101011\dots$
 $0.328 = 0.010100111111\dots$
3. $110/10 = 11$ $1100/11 = 100$ $1111/101 = 11$
4. $10011010: -128 + 2^4 + 2^3 + 2 = -102$
 $01101011: 2^6 + 2^5 + 2^3 + 2 + 1 = 107$
 $10111001: -128 + 2^5 + 2^4 + 2^3 + 1 = -71$
5. $1\ 10000010\ 011010011100010000000000$
 $10000010 = (130)_{10}$
 $-1.01101001110001 * 2^{130-127} = -1011.01001110001 \quad (-11.305)$
 $0\ 11001111\ 100001111010110000000000$
 $11001111 = (207)_{10}$
 $+1.10000111101011 * 2^{207-127} = 1.10000111101011 * 2^{80} \quad (1.8496 * 10^{24})$
6. $00110100 - 00010010 = 00110100 + 11101110 = 00100010$
 $01100100 - 11100100 = 01100100 + 00011100 = 10000000 \quad (\text{overflow})$
7. (Hexes) 60-38: $38 = 00111000$ 2's complement = $11001000 = C8 \rightarrow 60 + C8 = 128$
A6-97: $97 = 10010111$ 2's complement = $01101001 = 69 \rightarrow A6 + 69 = 10F$
F2-B6: $B6 = 10110110$ 2's complement = $01001010 = 4A \rightarrow F2 + 4A = 13C$
BC-10: $10 = 00010000$ 2's complement = $11110000 = F0 \rightarrow BC + F0 = 1AC$
8. $4+2 = 0100+0010 = 0110 \quad (6)$
 $5+3 = 0101+0011 = 1000 \quad (8)$
 $7+3 = 0111+0011 = 0001\ 0000 \quad (10)$
 $15+13 = 0001\ 0101+0001\ 0011 = 0010\ 1000 \quad (28)$
 $23+18 = 0010\ 0011+0001\ 1000 = 0100\ 0001 \quad (41)$
 $68+56 = 0110\ 1000+0101\ 0110 = 0001\ 0010\ 0100 \quad (124)$
 $123+111 = 0001\ 0010\ 0011+0001\ 0001\ 0001 = 0010\ 0011\ 0100 \quad (234)$
 $287+154 = 0010\ 1000\ 0111+0001\ 0101\ 0100 = 0100\ 0100\ 0001 \quad (441)$
9. Hello,How are you?^ _ ^ (there are 2 space.)
10. $11111001: \quad 6\text{'s } 1, \text{ so error.}$
 $00110110: \quad 4\text{'s } 1, \text{ so error.}$
 $01010101010101011: \quad 9\text{'s } 1, \text{ so correct.}$