

Number System Homework 2

Question:	Answer:
What is the value of $1ACE_{16} + 456_{16}$ in hexadecimal?	$E(14) + 6 = 20$ so carry the 1 and keep the 4. $C(12) + 5 + 1 = 18$ so carry the 1 and keep the 2. $A(10) + 4 + 1 = 15$ which is F so there is nothing to carry. The answer is $1F24_{16}$.
On the RGB color table, the color “sky blue” is the hexadecimal number ‘#38B0DE’. What is the decimal value for the blue component?	The RED component is ‘38’, the GREEN component is ‘B0’, and the BLUE component is ‘DE’. Therefore, $DE_{16} = 13 \times 16 + 14 \times 1 = 208 + 14 = 222_{10}$.
What is the value of $1CE2_{16} - 9F6_{16}$ in hexadecimal?	For the last two digits, you can’t subtract 2 from 6 so borrow and make E a D. You can’t subtract F from D so borrow and make C a B. Borrow 16 in each case. Then $2 + 16 - 6 = 12(C)$. $D(13) + 16 - F(15) = 14(E)$. $B(11) - 9 = 2$. The answer is $12EC_{16}$.
What is the average of the following three numbers in base 10? 10011_2 , 21_8 , $1E_{16}$	$10011_2 = 1 \times 1 + 1 \times 2 + 0 \times 4 + 0 \times 8 + 1 \times 16 = 19$ $21_8 = 2 \times 8 + 1 = 17$ $1E_{16} = 1 \times 16 + 14 = 30$ $(19 + 17 + 30) / 3 = 66 / 3 = 22_{10}$

Which of the following numbers has the least number of 1's in their binary representation?

- A) BAD_{16}
- B) FED_{16}
- C) CAB_{16}
- D) ACE_{16}

$BAD_{16} = 1011\ 1010\ 1101_2$ which is 8 bits.

$FED_{16} = 1111\ 1110\ 1101_2$ which is 10 bits.

$CAB_{16} = 1100\ 1010\ 1011_2$ which is 7 bits.

$ADE_{16} = 1010\ 1101\ 1110_2$ which is 8 bits.

Therefore, the answer is letter (C).