Number System Homework 1

Question:	Answer:
What is the value of 11101001011_2 in base 16?	By grouping digits, the binary number $11101001011_2 = 0111\ 0100\ 1011_2 = 74B_{16}$.
What is the value of 135_8 in base 10?	$135_8 = 1 \times 8^2 + 3 \times 8^1 + 5 \times 8^0$ $= 64 + 24 + 5 = 93_{10}$
What is the value of 1101011_2 in base 10?	By using expanded notation starting on the right, the value is $1 \times 2^0 + 1 \times 2^1 + 0 \times 2^2 + 1 \times 2^3 + 0 \times 2^4 + 1 \times 2^5 + 1 \times 2^6 = 1 + 2 + 8 + 32 + 64 = 107_{10}$.
How many 1s are in the binary representation of 4327_8?	$4327_8 = 100\ 011\ 010\ 111_2$ so there are 7 bits that are 1s and 5 bits that are 0s.
Which of the following is the largest number? a) AB_{16} b) 10101100_2 c) 251_8	$AB_{16} = 10101011_2 = 10*16+11 = 171_{10}$ $10101100_2 = 4 + 8 + 32 + 128 = 172_{10}$ $251_8 = 10101101_2 = 2*64+5*8+1 = 169_{10}$ Either way, the largest number is (b).