AP Java Name -
CNS AP Questions #1 Period -

Sample CNS questions that could appear on the AP exam.

1. Suppose that base-2 (binary) numbers and base-16 (hexadecimal) numbers can be denoted with subscripts, as shown below:

$2A_{hex} = 101010_{bin}$

Which is equal to $3D_{hex}$?
A. 111101_{bin}
B. 101111_{bin}
C. 10011_{bin}
D. 110100_{bin}
E. 101101_{bin}

2. A common use of hexadecimal numerals is to specify colors on web pages. Every color has a red, green, and blue component. In decimal notation, these are denoted with an ordered triple (x, y, z), where x, y, and z are the three components, each an `int` from 0 to 255. For example, a certain shade of red, whose red, green, and blue components are 238, 9, and 63, is represented as (238, 9, 63).

In hexadecimal, a color is represented in the format #RRGGBB, where RR, GG, and BB are hex values for red, green, and blue. Using this notation, the color (238, 9, 63) would be coded as #EE093F.

Which of the following hex codes represents the color (14, 20, 255)?
A. #1418FE
B. #0E20FE
C. #0E14FF
D. #0FE5FE
E. #0D14FF

3. In Java, a variable of type `int` is represented internally as a 32-bit signed integer. Suppose that one bit stores the sign, and the other 31 bits store the magnitude of the number in base 2. In this scheme, what is the largest value that can be stored as type `int`? HINT: REVIEW OBJECTIVE #3 IN THE UNIT 2 PRIMITIVE DATA TYPES LECTURE NOTES EVEN IF THOSE NOTES HAVEN'T YET BEEN ASSIGNED.
A. 2^{32}
B. $2^{32} - 1$
C. 2^{31}
D. $2^{31} - 1$
E. 2^{30}