

Other Bases #3

NAME _____

DATE _____

We have been studying place value in the decimal, octal, and binary systems. Most computer have registers that have 8, 16, or 32 bits. It is convenient to write numbers in hexadecimal since 4 binary bits make one hex number.

Binary	Hex	Decimal
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	A	10
1011	B	11
1100	C	12
1101	D	13
1110	E	14
1111	F	15

Write the next 20 hexadecimal numbers (after F).

In base 10, the number 259 means:
 $(2 \times 100) + (5 \times 10) + (9 \times 1) = 259$

You have figured out how to find the decimal equivalents of binary and octal numbers.

Find the decimal equivalents of these hexadecimal numbers.

$$21_{16} = \underline{\hspace{2cm}}_{10}$$

$$27_{16} = \underline{\hspace{2cm}}_{10}$$

$$30_{16} = \underline{\hspace{2cm}}_{10}$$

$$100_{16} = \underline{\hspace{2cm}}_{10}$$

How, in general, can you find the decimal equivalent of a hexadecimal number of any size? Write a formula or algorithm to do so.

Use your formula to find the decimal equivalent of 245_{16} .

Show your work below.