

**Base Systems: Hexadecimal**

Hexadecimal uses base \_\_\_\_ ?

Computer programmers use hexadecimal because:

Computers store data in bytes. Each byte contains 8 bits of data (zeros and ones). Example:  
1100 0101

Each group of four bits is called a nibble and a nibble can represent the base 10 numbers from 0 - 15.

$0000_2 = 0_{10}$  and  $1111_2 = 15_{10}$  so using a base system with 16 digits makes converting from binary more convenient.

Hexadecimal digits:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A= , B= , C= , D= , E= , F=

Let's take a hexadecimal number directly from the website [imagecolorpicker.com](http://imagecolorpicker.com):

\_\_\_\_\_16 = \_\_\_\_\_10

\_\_\_\_\_10 = \_\_\_\_\_16

$$10000001_2 = \text{_____}_{10}$$

$$\text{FF}_{16} = \text{_____}_2$$

$$10101011_2 = \text{_____}_{16}$$

$$1\text{D}_{16} = \text{_____}_{10}$$

$$238_{10} = \text{_____}_{16}$$