NAME: _____

Color Me #663399

Hexadecimal Numbers (Base 16)

Explore:
Here are three colors and their hexadecimal codes:

#ff9900 #ff5500 #ff0000

What do you notice about these colors?

_____
_____

What do you notice about their hex codes, which begin with #?

_____
_____

What color would you guess #663399 is? What makes you guess that color?

_____
_____

Apply: Software Engineer *Erik Antelman* designs and maintains large software systems. Part of his job involves finding mistakes. Base 16, hexadecimal (also known as “hex”) is “something I use every day I am debugging, which is most days since I often need to fix things.”



(Learn more about Antelman at Math4Science.org)

Hexadecimal code or base 16 uses the 10 digits (0-9) and the first six letters (a-f). The letter e in hex code is 14 in the system we usually use (base 10). What would 3e be? (Hint: the first digit tells you how many 16s are part of the number!) _____
Complete this table to go from base 16 to base 10 and back:

Base 16	2c	ff	a			f	10f
Base 10	45		11	18	256		



Practice: As you saw above, hex is also used to tell computers which colors to display. It encodes the mix of red, green, and blue that creates a color. #000000 is black – no red, green, or blue at all. #ffffff is white – pure red, pure green, and pure blue, together. In RGB code, black is (0,0,0) and white is (255, 255, 255).

Practice going from hexadecimal color codes to RGB and vice-versa in this table. Start your hex code with a #. That's followed by two digits (00-ff) each for red, green, and blue.

Hex		#ff15aa	#a8327b		#663399		#f0e27d
RGB	(00,255,00)			(59,103,104)		(37,221,7)	
Color							

Which color in the table has the most RED in it? _____ (Judge by the numbers!)

Which color in the table has the most GREEN in it? _____

Which color in the table has the most BLUE in it? _____

Use this website (https://www.w3schools.com/colors/colors_hexadecimal.asp) to figure out what each color looks like. Then fill out the last row in the table above.

Look over your table. What do you notice about the hexadecimal (base 16) codes for different colors?

_____
_____

What do you notice about the RGB codes for the different colors?

_____
_____

Which of the colors you explored in the table do you like best? (Give your name for it and also its codes.)

Hex: RGB: Color: