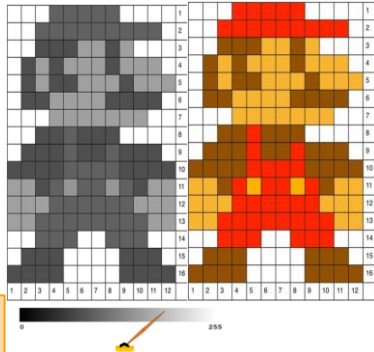# 1.3. Computers and Color Images

*Let's create colors using **R**G**B** components!*

1. Pictures often are colored. With the WebApp, you can also design Grayscale and Color Images.

   Grayscale images have tones or color values that go from 00-FF (hexadecimal numbers) or 0-255. ***Which value is the darkest? Why?***

   Set WebApp (at bottom of screen) to create grayscale or color images

2. Computers read colors through numbers. Each color has 3 components: Red, Green, and Blue. To make a color, the value of each RGB component changes in different combinations.

   These RGB values give you red, why?
   "FF0000" = (255, 0, 0) = red

   Using WebApp in color, change the values of components and create different colors. Use the image on the right to talk about how the computer combines RGB components to make colors.
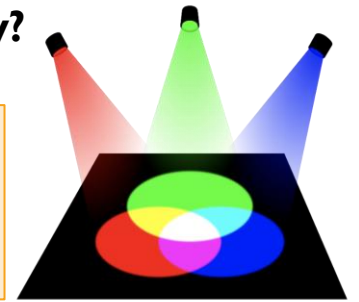
3. **Design** color images on paper by filling in complete squares with any colors you want. Then, find out what hexadecimal codes you need for each color you included in the image.
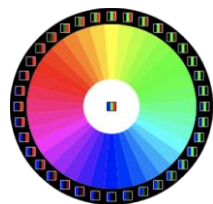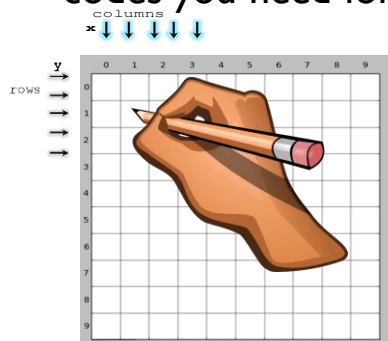
   To find out hex codes for each color use your phone or go online and visit: http://**htmlcolorcodes.com**

   Remember, you can change the matrix sizes (e.g., 8x8, 10x10) in WebApp!

4. **Challenge**: without showing your image, tell another person in your team the coordinates and color codes (HEX) of your image to see if that person using WebApp can create an image similar to the one you designed.
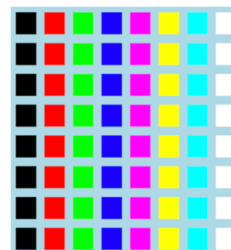
   Remember *that each of the **R**G**B** components goes from 00 until FF, What is the decimal value of FF?*

   Hexadecimal Color Pixel: "RRGGBB"
   R: 00 FF
   G: 00 FF
   B: 00 FF

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