Name: _____

Period: ____ Date: _____

pHET: Color Vision

https://phet.colorado.edu/sims/html/color-vision/latest/color-vision_en.html

Pre-Lab Question: How do we see different colors?

Part A: Single Bulb

- 1. Play with the controls of this part to gain understanding of how things work.
- 2. With the **white colored bulb** selected, answer the following questions:
 - a. What color is being emitted *from the flashlight*?_____
 - b. Is this really a color? Why or why not? ______
- 3. Click the icon below the flashlight to the right. This shows you the particles of light.
 - a. Study the particles of light leaving the flashlight. What colors do you see actually make up white light?
 - b. Looking at your answer above, explain why white isn't really one color.
- 4. Now, turn ON the <u>filter color option</u> by clicking on the black circular switch below the filter ring. If you do this correctly, you should see the <u>yellow</u> filter appear.
 - a. What colors are being emitted *from the flashlight*?_____
 - b. What color is able to *pass through* the YELLOW filter? ______
 - c. Which colors are being *absorbed by the filter*?
- 6. Switch from the <u>white colored bulb</u> to the <u>yellow colored bulb</u> above the flashlight. Notice you can now change the bulb color by *sliding* the control left and right. Experiment with changing the bulb color *and* the filter color several times. Do this until you feel you *can predict what will happen each time you change the bulb and filter colors*.

Summarize what you've observed below:

Part B: RGB Bulbs

- 1. What are the primary colors of light? ______, ____, and _____,
- 2. What color does the person see when the sliders are all the way up? ______
- 3. Leave the red and green sliders up and turn the blue off. What is the color?
- 4. Now turn the green off and blue back to maximum. What is the color?
- 5. Turn the red off and green back to maximum. What is the color?
- 6. The colors you just made are *complimentary colors* to the primary ones, meaning they are blends. Now try to make the following colors based on sliding the power levels of each color to the correct position. Record you results in the table below. Use percentages or fractions to **estimate** the power level.

Color	Red Slider Position	Green Slider Position	Blue Slider Position
Orange	100% or (1/1)	50% or (1/2)	0% or (0/1)
Brown			
Gray			
Pink			
Violet (purple-ish)			
Black			

Part C: Light vs. Paint

Think about a time when you were mixing different colors of paint. Then, think about what you've just learned about color and light.

Explain the similarities and differences between creating the color <u>white</u> and the color <u>black</u> using paint colors vs. using light. (4-5 sentences)