Names \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_

**Color Vision pHet Lab**
<http://bit.ly/1MqyDKv>

1. Pre Lab Question – How do we see different colors? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

First, click on the “Single Bulb” icon

Play with the controls of this part to gain understanding of how things work.

(take no more than 2-3 minutes max to get familiar with the controls)

1. If you haven’t already, turn on the flashlight and click the bulb icon above the flashlight and to the left. What color does this give you? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Is this really a color? Why or why not? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Click the icon below the flashlight to the right. This shows you the particles of light. Looking at your answer above, explain why white isn’t really one color.

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1. Click on the reset button  in the bottom right corner. Turn the colored (yellow) flashlight on and switch to the light particles mode. What color is coming from the flashlight? What does the person see?

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1. Now let’s add a filter. Click the button above and to the right of the filter color. Your filter should be yellow. What happens to the particles of light as they make their way to the person’s eyes?

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1. Try changing the filter color to various shades of green. What happens to the color the person sees as the filter gets more and more green? What happens to the light particles?

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1. Switch back to a solid beam of light (below flashlight on left side) and repeat the steps for question 6. What happens to the strength of the light as the filter becomes more and more green?

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| --- | --- | --- |
| **Color of Light** | **Color of Filter** | **Color Observed** |
| Red | Yellow |  |
| Red | Magenta (purplish) |  |
| Blue | Blue |  |
| Blue | Cyan (light blue) |  |
| Blue | Red |  |
| Yellow | Red |  |
| Yellow | Blue |  |

1. Next try these color combinations:
2. Switch to the white light bulb & change the filter color a few times. How was the color you saw changed?

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1. Using filters to get a color is called **subtractive** coloring. Why do you think it might be called that?

HINT: think about what regular white light is.

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Now click on the RGB Bulbs icon at the bottom of the screen.

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? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **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 (purplish) |  |  |  |
| Black |  |  |  |

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. You can use percentages or fractions to **estimate** the power level.