

Name: \_\_\_\_\_

Lab Partner: \_\_\_\_\_

Date: \_\_\_\_\_

## Get Critical! STEM Kit Science Notebook

The NSEOC highly recommends students keep a science notebook for ALL science classes, but if this is not possible, all of the Science Notebook prompts from the Get Critical! STEM Kit booklet are included with space for students to write, draw or sketch as needed. The page numbers reference the page in the booklet the original prompt can be found.

### Part 1: Reflecting Light

Page 5 – Draw a diagram of your setup and use the green colored pencil to show what happens to the light. Label the incoming light beam the Incident Ray and the outgoing beam the Reflected Ray.

Page 6 – What do you notice with the reflected ray as you move the light from 70 to 65 to 60 degrees?

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Page 7 - Use the following data table to record the critical angles of water, sugar water and glass.

Substance	Index of Refraction	Critical Angle
Water	1.33	
30% Sugar Solution	1.38	
Glass	1.50	
Ruby	1.76	35°
Zircon	1.96	31°
Diamond	2.42	

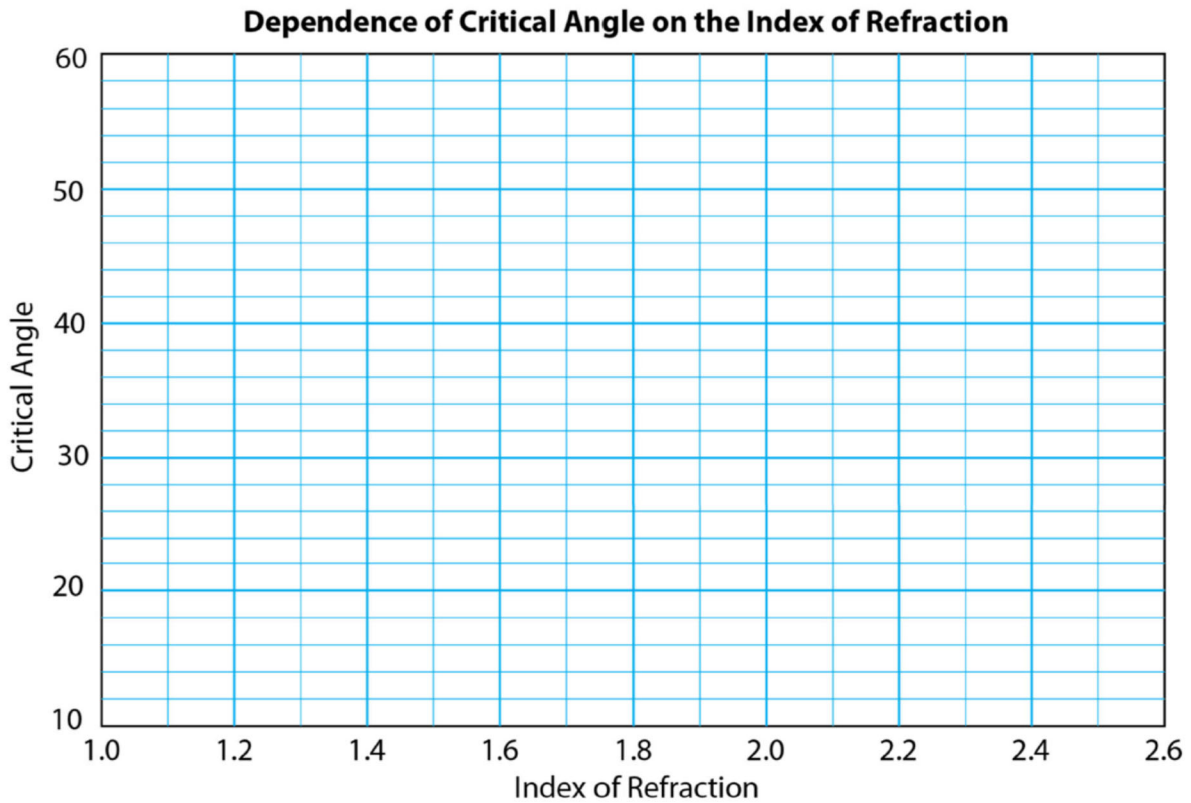
Page 8 – How did increasing the density of the water affect its critical angle?

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Page 9 – Use this template to graph the information from your data table. You will need to extrapolate the critical angle of the diamond using the graph (add that number to your data table).



### Part 2 – Tunnels of Light

Page 11 – At which angle does the amount of light drop off?

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Page 12 – Record your Morse Code messages here.

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### Part 3 – Diffraction of Light

Page 14 – Draw what you observe through the slit in the two pencils.

Page 14 – Use the template below to record your observations in the spectroscopy for each of the light sources (red, green, blue and white).



Red LED



Green LED



Blue LED



White LED

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Page 16 – What color do you see at the other end of the fiber optic cable when you shine all three colored LED lights through at one time?

Page 16 – Describe what happens when you hook the fiber optic cable up to the spectroscope and look through it while blocking one or more of the colored LEDs. How can you use the three colors to send a more complex message?