

Name _____

Period _____

Partner _____

Date _____

Spectra

Prelab Questions:

1. What is a continuous spectrum? Draw a picture to illustrate your answer. Put the red to the left side of the box. Fill the box with color top to bottom and from left to right.



2. What is a bright-line spectrum? Draw a picture to illustrate your answer.



3. What is the difference between a bright-line spectrum and an absorption spectrum?

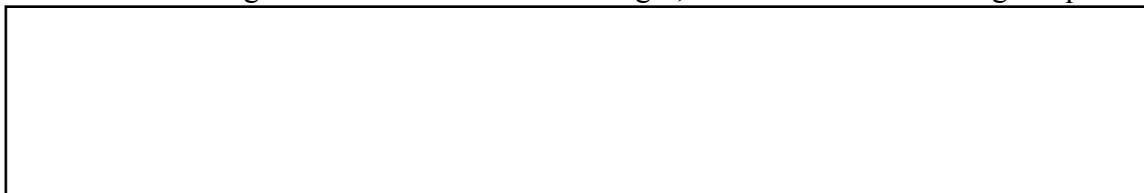
4. Who was Balmer and what is his formula?

5. What is the value of n_{final} for each of the transitions that produces visible light in the hydrogen atom?

Procedure:

Part A: Incandescent Bulb

Observe the spectrum produced by an incandescent bulb. Look through the spectroscope at the lit bulb and use the colored pencils to draw the continuous spectrum that you see inside the box below. Put the red to the left side of the box. Fill the box with color top to bottom and from left to right. If there is no color or no light, shade the area with a regular pencil.



Part B: Fluorescent Bulb

Observe the spectrum produced by an fluorescent bulb. Record your observations and include a picture to illustrate what you have seen.



Part C: Hydrogen

Observe the spectrum produced by hydrogen gas. Record your observations and include a picture to illustrate what you have seen.



Measure the wavelengths of each of the colored lines that you see and place your data into a neat table. The first column of the table should be for the colors of the lines.

Part D: Another Element

Observe the spectrum produced by the gas of another element. Record your observations and include a picture to illustrate what you have seen.

Name of Element: _____



Post Lab Questions

1. For each light source you observed, indicate which type of spectrum was produced and justify your answer.

Part A:

Part B:

Part C:

Part D:

2. For each bright line in the hydrogen spectrum you observed, tell what is happening inside the hydrogen atom to produce this line. Be very specific and justify your answer.

3. Calculate the value of n_{initial} for each of the lines you saw in the hydrogen spectrum. Put your answers into a neat table. Show your work.