

Name: _____
Student ID: _____

Date: _____
Section/Instructor: _____

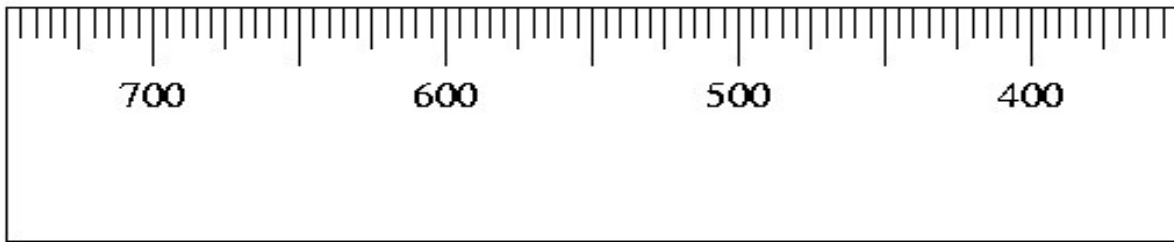
Astro 1 Spectroscopy Assignment

Pick a location downtown on College Ave., between Pugh St. and Fraser St. which has “neon lighting” of more than one color. (Some suggestions are The Diner, Take Six, or Chopstick Express, but you don’t have to limit yourself to these locations.) If you see other students at a particular location, please try to pick somewhere else.

Location: _____

Pick a part of the sign which consists of one color (list part: _____)

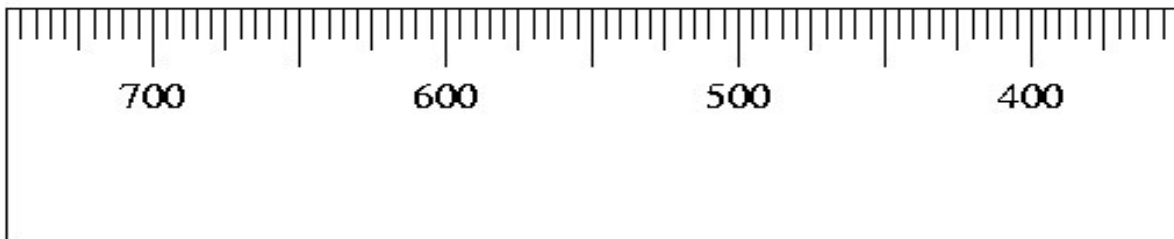
1. What color is this part of the sign?
2. Looking through the spectrometer, sketch what you see below, labeling colors as appropriate.



3. What type of spectra is this? (Continuous, Emission, Absorption)
4. a. Based on your observations at Davey lab, are you looking at light from neon gas?
b. If not, what element is it?

**Pick another part of the sign which is a different color
(list part _____)**

5. What color is this part of the sign?
6. Looking through the spectrometer, sketch what you see below, labeling colors as appropriate.

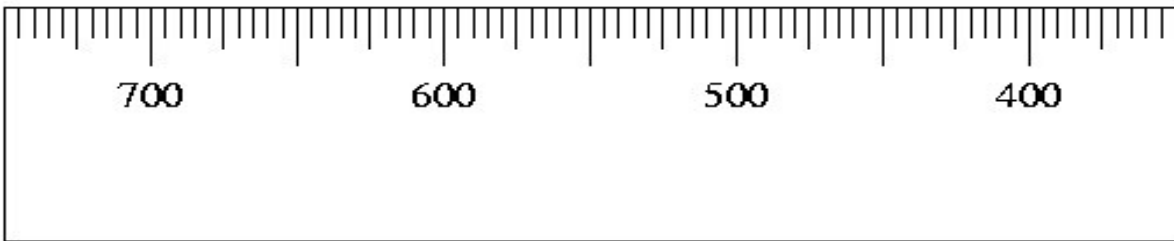


7. What type of spectra is this? (Continuous, Emission, Absorption)
8. a. Based on your observations at Davey lab, are you looking at light from neon gas?
 - b. If not, what element is it?

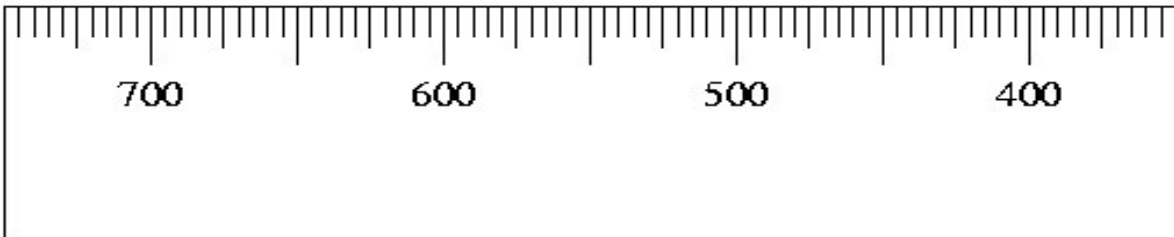
Now go back to the intersection of Allen St. and College Ave.

Look at the green and red traffic lights at the intersection through the spectrometer.
(Please stand on the side of the street as you do this.)

9. Looking at the green light through the spectrometer, sketch what you see below, labeling colors as appropriate.



10. What type of spectra is this? (Continuous, Emission, Absorption)
11. Looking at the red light through the spectrometer, sketch what you see below, labeling colors as appropriate.



12. What type of spectra is this? (Continuous, Emission, Absorption)
13. You are driving down a deserted road at night when a cop pulls you over for driving through a red light. Having just learned about the Doppler Effect in class, you tell him that the red light must have appeared green to you because you were driving towards it. Assume for a moment that the red light peaks at a wavelength of 700 nm and the green light peaks at a wavelength of 490 nm. How fast (compared to the speed of light) would you have to be driving for this to occur? Compare this with the speed limit downtown, which is 35 mph.
(The Doppler Effect formula is $\Delta\lambda/\lambda = v/c$, where $c = 300,000 \text{ km/s} = 670,000,000 \text{ mph}$).