- *For example, if the slope is 0.6 and y-intercept is 4.2 for the $\sqrt{\%T}$ vs. concentration plot, then the equation is:* $\%T = (0.6 \times concentration + 4.2)^2$

- Show one example of calculation of making diluted solutions from 100% original dye solution
- Use of proper units
- Include and discuss the percent transmittance, *%T,* (light vs. dye) in terms of wavelength (which wavelength is best for each dye solution? Why?)

Table 1. Percent Transmittance by Wavelength

Dye Color	430 nm (Blue/Violet light)	470 nm (Blue light)	565 nm (Yellow light)	635 nm (Red light)
Color 1 *e.g. Red*	35.73 %	17.77 %	69.85 %	100.16 %
Color 2 *e.g. Green*	65.68 %	75.55 %	77.56 %	58.39 %
Color 3 *e.g. Blue*	91.22 %	83.79 %	37.54 %	16.13 %

- Include a table of the original data: dye concentration vs. *%T*

Table 2. Percent Transmittance of the 10 Dilutions of the Red Food Coloring

Concentration	Blank	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
%T											

Discussion (2pts)

- Which graph gives the best fit line, or the straightest line?
  1. Does it match the equation of Beer-Lambert's law?
  2. Explain each term (and its units) of the Beer-Lambert's equation
- Discuss how wavelength affected the percent transmittance of dyes
- Discuss possible limitations in the spectroscopy technique used in this investigation

Conclusion (1pt)

- Restate the goal of this experiment
- **Summarize** the factors that affect the intensity of color and how
- Summarize the straight-line plot that relates the function of *%T vs. dye concentration*. Describe the usefulness of having a straight-line plot how is this related to Beer-Lambert's law.

Works Cited (0.5pt)

Reference the manual and other reputable sources using ACS format.