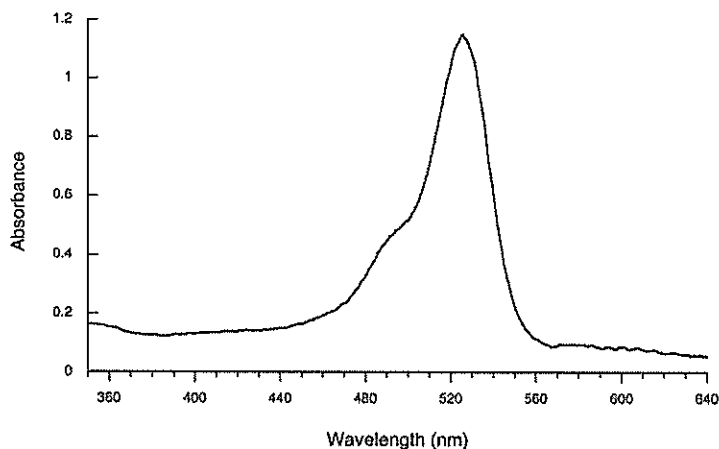


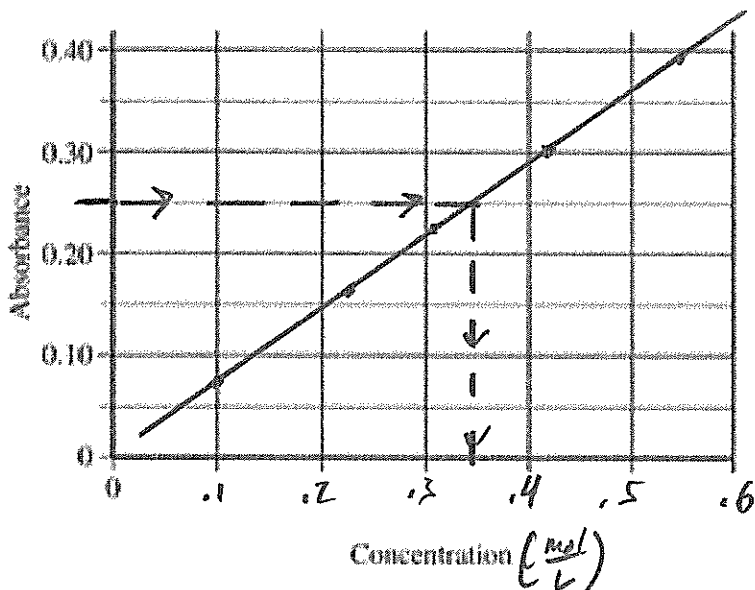
1) A student is trying to determine the concentration of the food dye FD&C Red #3 in a solution. In preparation to use spectrophotometry the student has collected the absorbance vs. wavelength of the pure dye and graphed it below.



A) What wavelength should the student use to measure the absorbance of the dye? Explain your answer. *~530nm, that is the maximum of absorbance and we will have the greatest sensitivity.*

B) A calibration plot for the concentration of dye is prepared at the optimum wavelength. The data below give the absorbencies measured for a set of solutions of known concentration of dye.

(i) Draw a Beer's law calibration plot of all the data on the grid below. Indicate the scale on the horizontal axis by labeling it with appropriate values.



Concentration (mol L)	Absorbance
0.10	0.0720
0.22	0.158
0.31	0.223
0.42	0.302
0.55	0.396

(ii) An dye solution of unknown concentration has an absorbance of 0.250. Use the plot you drew in part (i) to determine the concentration, in moles per liter, of this solution.

Concentration is ~ 0.34 M