For this activity, we were to extract pixel information from the hand-drawn plot and then reconstruct the same graph. The hand-drawn plot that was used in this activity was from a paper by RW Quick, et al., entitled *Thermal Conductivity of Copper*, published in *Physical Review (Series I), Volume 2, Number 6.* Ideally, the axes of the hand-drawn plot must be properly set such that the x-axis runs along the horizontal, and the y-axis runs along the vertical direction; this was taken into account during the selection of the plot to be used.

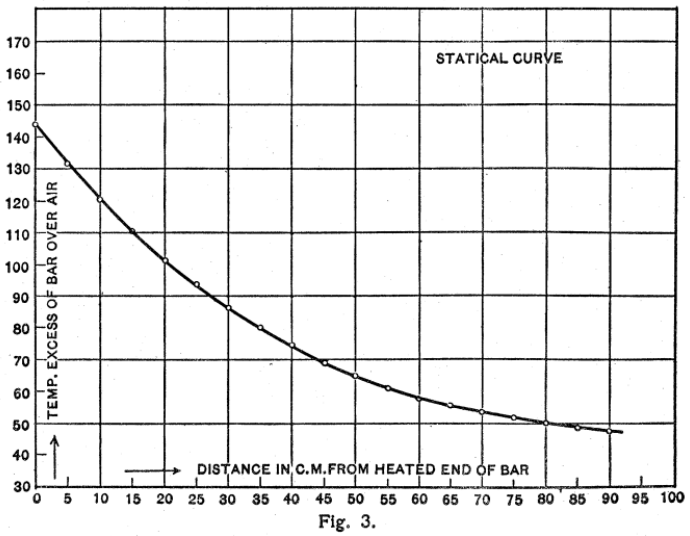

Figure 1. Hand-drawn plot of the statical curve of the long bar.

Shown in Table 1 below are the pixel information necessary in the digitally reconstructing the hand-drawn plot; these pixel information were acquired using Paint by pinpointing necessary points in the graph. The first two rows, Origin and End, are pixel coordinates of the origin and end points of the two axes (x and y), which are necessary in obtaining the pixel distance along the respective axes. The pixel-per-unit conversion factors were then calculated by dividing the pixel distances by the number of units along the x and y axes.

Table 1. Pixel information from plot of absorption spectra for Chlorophyll A and green food color.

	X (coordinate)	Y (coordinate)
Origin	40	475
End	655	46
Distance (Absolute value)	615	429
Pixel per unit conversion	6.15	3.06

Table 2 shows the pixel coordinates of desired points in the plot along with their corresponding converted coordinates. It is worth noting that in Paint, the y-axis is inverted, so additional procedures were done in obtaining the fourth column: Upon converting using the pixel-per-unit conversion, I subtracted the converted coordinates from the total number of units so as to get

the "inversion" I needed. Then for both axes, it is also worth noting that not all plots start at zero, so shifting needs to be done (as was the case for my y-axis starting at 30).

Pixel coordinate (X)	Pixel coordinate (Y)	Converted coordinate (X)	Converted coordinate (Y)
40	126	0	143.2913
70	164	4.878043821	130.8904
102	198	10.08129585	119.7948
133	229	15.12194626	109.6783
164	257	20.16259667	100.5408
195	280	25.20324707	93.03494
225	302	30.08129585	85.85546
256	321	35.12194626	79.655
286	338	39.99999504	74.10722
318	355	45.20324707	68.55945
347	368	49.91869423	64.31703
379	380	55.12194626	60.40095
408	390	59.83739341	57.13755
438	396	64.7154422	55.17951
469	402	69.7560926	53.22147
500	408	74.79674301	51.26343
530	413	79.67479179	49.63173
561	418	84.7154422	48.00003
591	421	89.59349098	47.02101

Plotting these in Microsoft Excel, I was able to get the graph shown in Fig. 2 below.

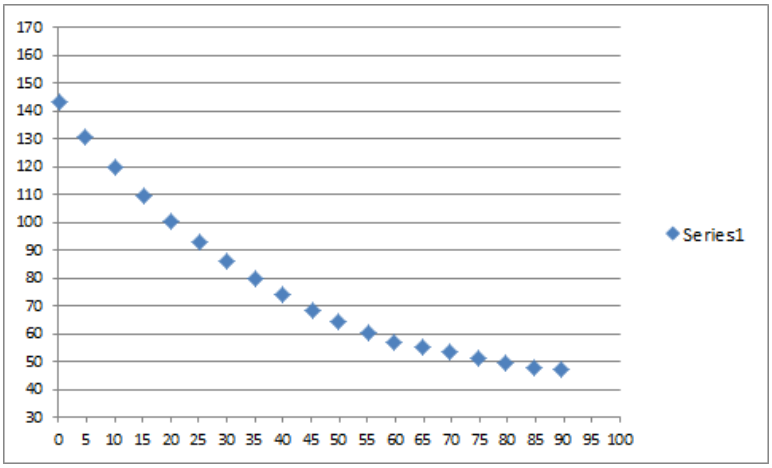

Figure 2. Plot of the converted coordinates

We then see the overlay of the generated plot in Excel on the hand-drawn plot in Fig. 3.

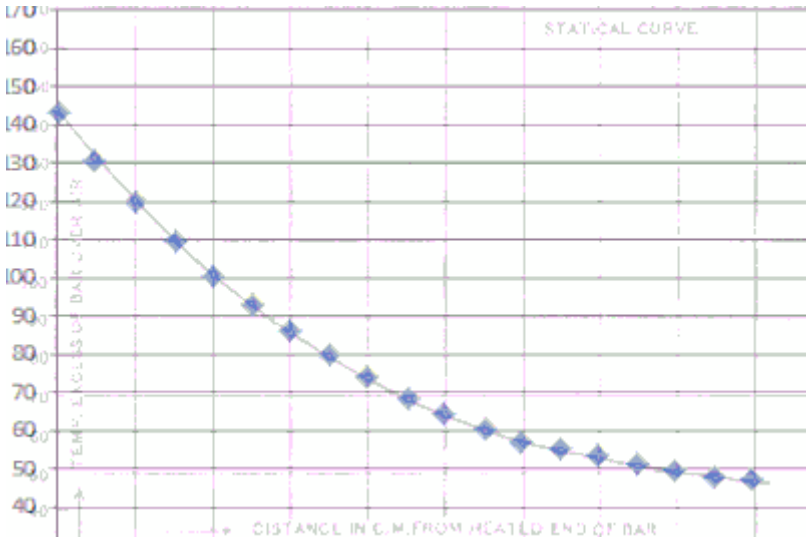

Figure 3. Overlay of generetad plot on hand-drawn plot.

I rate myself 11/10 for this activity because I was successful in producing the required output and accurately reconstruct the hand-drawn plot, and I was also able to overlay the generated plot on the hand-drawn plot to show that I have accurately reconstructed the graph.