Assignment
Day 5

Below is a question on day 2 of the May 2019 IB Math Studies exam. I think you will recognize the topic. Day 2 typically contains 5 or 6 questions longer questions where you have to show all work and answers on separate paper. In other words, don't plan on writing anything on this sheet!.

Be sure to label each part of your work clearly.

[Maximum mark: 16]

A healthy human body temperature is $37.0\,°C$. Eight people were medically examined and the difference in their body temperature (°C), from $37.0\,°C$, was recorded. Their heartbeat (beats per minute) was also recorded.

Temperature difference from 37°C (x)	−0.2	0.3	−0.3	−0.2	−0.1	0	0.2	0.5
Heartbeat (y)	63	77	70	74	65	78	79	86

(a) Draw a scatter diagram for temperature difference from $37\,°C$ (x) against heartbeat (y). Use a scale of $2\,cm$ for $0.1\,°C$ on the horizontal axis, starting with $−0.3\,°C$. Use a scale of $1\,cm$ for 2 heartbeats per minute on the vertical axis, starting with 60 beats per minute.   [4]

(b) Write down, for this set of data

    (i)   the mean temperature difference from $37\,°C$, $\bar{x}$;

NO work necessary

    (ii)   the mean number of heartbeats per minute, $\bar{y}$.   [2]

(c) Plot and label the point $M(\bar{x}, \bar{y})$ on the scatter diagram.   [2]

(d) (i)   Use your graphic display calculator to find the Pearson's product–moment correlation coefficient, r.

No work Necessary

    (ii)   Hence describe the correlation between temperature difference from $37\,°C$ and heartbeat.   [4]

(e) Use your graphic display calculator to find the equation of the regression line y on x.   [2]

No work Necessary.

(f) Draw the regression line y on x on the scatter diagram.   [2]
    (Accurately!)

Note: On the actual IB exam, you have to show work on many questions but Not on Correlation (r) or the LSRL. The reason we are doing so in class is to prepare for the project.