1) Problem Purpose: To calibrate a load sensor to be able calculate thrust within a 95% certainty.

2) Known information:

$$\text{PerformanceSensitivity} = 50\ \text{mV/lb} \pm 15\%$$

$$\text{Load}_{f,adj}^{CH\#} = \text{applied Load}(f) \times \frac{V_{F,eff}^{CH\#}}{V_{F,eff}^{CH0} + V_{F,eff}^{CH\#}}$$ (assuming applied load is split unevenly in the channels)

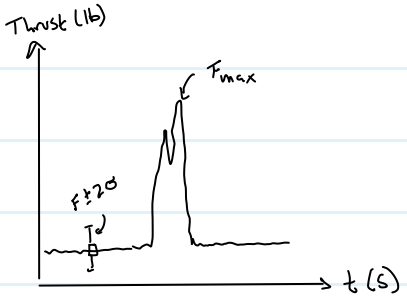
Uncertainties should report 95% or 2σ

3) Determine what to find: The slope and y intercept of the line of best fit

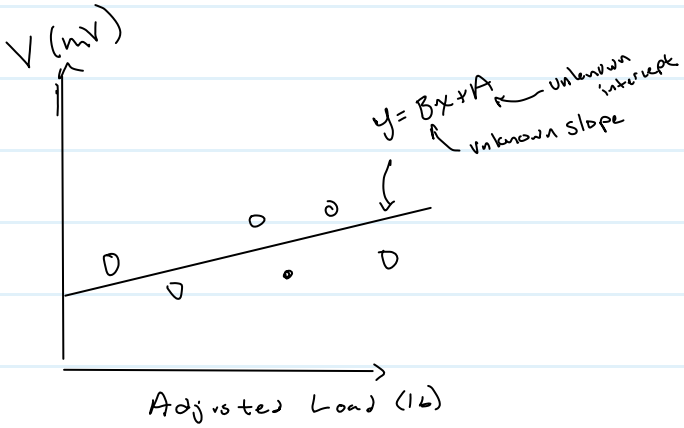
Find calibration fits to convert thrust data from mV to lb. Calculate average peak thrust.

4) Simplify The Problem: Assume thrust data given is accurate and any obvious outliers in the data may be removed.

5) Sketch the problem.



(Fictitious data for visualization only.)



6) Determine fundamental principles

Data from sensors will have associated error, which will propigate through calculations.

95% of data will fall within $\bar{x} + 2\sigma_x$

7) Alternate approaches:

Compare given thrust data with expected thrust data

(This will probably be more erroneous; many calculations will take place with their own errors.)