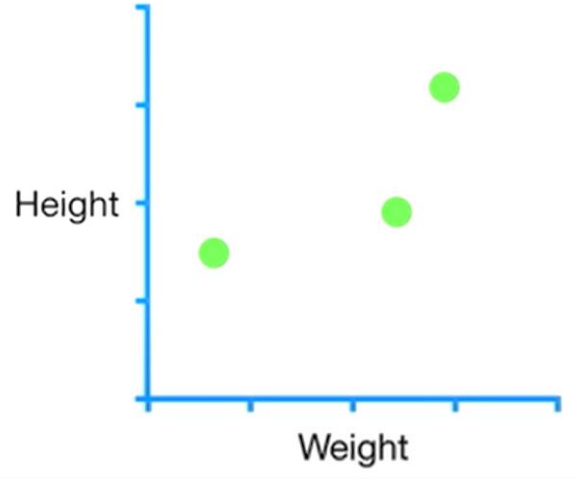
Sample Questions

- Consider two crypto-currencies growing arbitrarily large, which can be defined as:
  - Currency 1= $3t^2 + 2t - 1$ & currency 2= $2t^2 + 4$.
  - Find its comparative performance as $t \to \infty$, and comment on its relationship.
- Consider a simple data set, which describes the relation between weight and height.
  - Assume slope = 1, estimate the equation of line which predicts the height of the individual for three intercepts i.e. 0, 1, and -1. Plot the sum of squared residual.



- A definition of the second derivative test states:

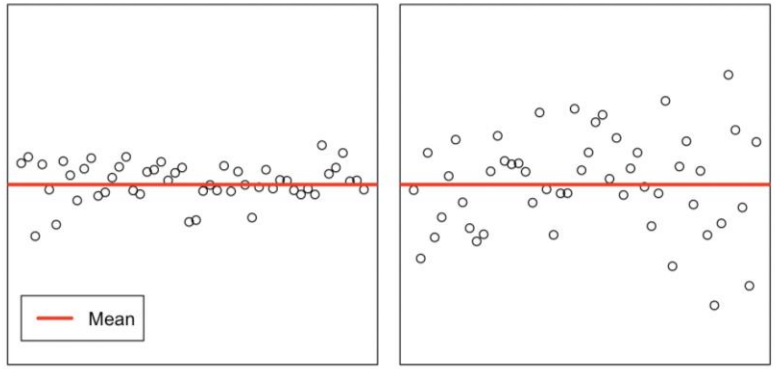
  t = c will be point of local maxima if f'(c) = 0 and f”(c)<0. Then, f(c) will be having local maximum value.

  - Find the local maxima of the function representing the behaviour of a share:

$$y = 4t^3 + 12t^2 + 12t + 10$$

- What is Mean, Median, Mode?
- Consider a data having L discrete levels $X_0, X_1, \cdots X_{L-1}$. Assume $k \in [0, L-1]$, $n(k)$ is frequency of data of k^{th} level.
  - How to estimate the probability/cumulative distribution function of the data?
  - What is a relation between histogram and pdf in this scenario?

- Discuss the relation between both the figures in terms of SD and Mean.



- What is the difference between the sample and population?
- What is the use of z-score? Briefly discuss its main limitation in real-world scenarios.