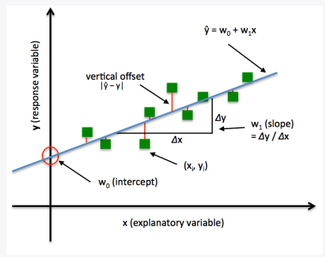
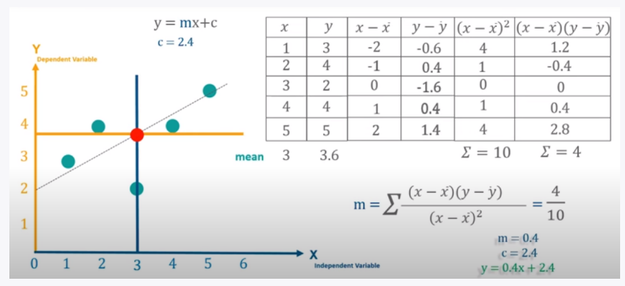
House price prediction using Linear Regression

1. **Problem** — Predicting the price of the House based on Area
2. **Dataset** — House price with its Area
   - X-Area | Y-Price
3. **Summarize Dataset**
   - dataset.shape → (1460, 2)
   - dataset.head(5)
4. **Visualize Dataset** — Plot the Graph between Area & Price
5. **Segregate Dataset into X & Y**
   - Input: X = dataset.drop('price',axis='columns')
   - Output: Y = dataset.price
6. **Algorithm** — Linear Regression



Data modeled using Straight line
Y=MX+B (M- Slope | B-Intercept)

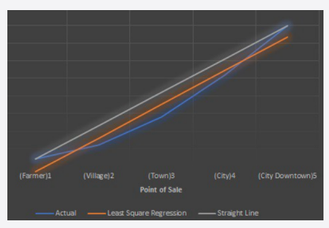


x	y	x − x̄	y − ȳ	(x − x̄)²	(x − x̄)(y − ȳ)
1	3	-2	-0.6	4	1.2
2	4	-1	0.4	1	-0.4
3	2	0	-1.6	0	0
4	4	1	0.4	1	0.4
5	5	2	1.4	4	2.8

Detail

Steps

1. Plot X & Y
2. Finding Mean for X
3. Finding Mean for Y
4. Drawing Vertical line(X-axis) from the point of mean(X) - X'
5. Drawing Horizontal line(Y-axis) from the point of mean(Y) - Y'
6. Mark the point of Intersection of that 2-Lines (mean(X),mean(Y))
7. Calculate X-X'
8. Calculate Y-Y'
9. Calculate (X-X')^2
10. Calculate (X-X')(Y-Y')
11. m- Substitute Values in Slope Formula
    - M - SLOPE
    - $m = \sum \frac{(x - \bar{x})(y - \bar{y})}{(x - \bar{x})^2}$
12. Intercept b = Y' - m * X'
    - B - INTERCEPT
13. Substitute m & b in Straight line equation
    - Y = mX + b



Least Square Regression will provide better result than straight Line

Sum square error of least square is less than Sum square error of Straight line

7. **Training**
8. **Prediction**