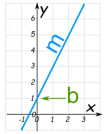
Simple Linear Regression: [One independent and one dependent vairbale]

Simple Linear Regression is a type of Regression algorithms that models the relationship between a dependent variable and a single independent variable. The relationship shown by a Simple Linear Regression model is linear or a sloped straight line, hence it is called Simple Linear Regression.

The key point in Simple Linear Regression is that the dependent variable must be a continuous/real value. However, the independent variable can be measured on continuous or categorical values.



price = m * area + b

Linear Regression Equation:
y = mx + b

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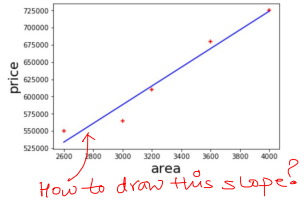
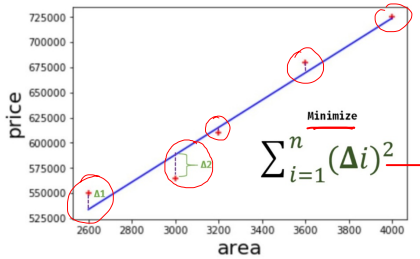
Slope (or Gradient) Y Intercept



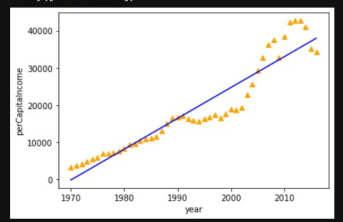
How to draw this slope?



Delta between the slop line and sum of the sq of delta is calculated to get the this 0.

```
[11]: import pandas as pd
      import numpy as np
      import matplotlib.pyplot as plt
      from sklearn import linear_model

      df = pd.read_csv('percapita.csv')
      df

      %matplotlib inline
      plt.xlabel('year')
      plt.ylabel('perCapitaIncome')
      plt.scatter(df.year, df.capita, color='orange', marker='^')

      reg = linear_model.LinearRegression()  # Create an object for linear regression.
      reg.fit(df[['year']], df.capita)
      plt.plot(df.year, reg.predict(df[['year']]), color='blue')
      reg.predict([[2020]])

      reg.coef_
```

```
[11]: array([828.46507522])
```




```
[4]: #reg.intercept_

[4]: -1632210.7578554575

[14]: y = mx + b
      828.46507522 * 2020 -1632210.7578554575

[14]: 41288.694088942604
```