**Gradient descent**

An algorithm to minimize a function by optimizing params

Algo 🡪 set of instruction that works on data in a particular way

Ex: a person A has attended a test 🡪 total marks is 50

Person A goes to person B and asks , guess how many marks have I got??

Guess 1 🡪 40 🡪 no its too High

Guess 2 🡪 30 🡪 nope 30 is too low

Guess 3 🡪 35 🡪 you are close now 😊

**That’s how this algo works internally. Start with random guess and then move to best answer.**

New value( new guess) = old value ( prev guess) – step size

Step size 🡪 Learning rate \*\* slope

What is learning rate and slope?

Ex: lets take an example of a function

Y = (x)^2 🡪 (x)squared

Code basics

**1) Linear regression**

**a) single variable**

1) plot a simple single variable chart in excel.

|  |  |
| --- | --- |
| **area(x)** | **price(y)** |
| 2,600 | 5,50,000.00 |
| 3,000 | 5,65,000.00 |
| 3,200 | 6,10,000.00 |
| 3,600 | 6,80,000.00 |
| 4,000 | 7,25,000.00 |

2)Using python plot the graph and also there is an option in chart itself , to derive the linear equation.

Add another variable and make the prediction.

Y = mx + c

**b) multivariable**