

Deena 20104016

```
In [1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as pp
```

Problem Statement

LINEAR REGRESSION

```
In [2]: a = pd.read_csv("Fitness.csv")
```

Out[2]:

	Row Labels	Sum of Jan	Sum of Feb	Sum of Mar	Sum of Total Sales
0	A	5.62%	7.73%	6.16%	75
1	B	4.21%	17.27%	19.21%	160
2	C	9.83%	11.60%	5.17%	101
3	D	2.81%	21.91%	7.88%	127
4	E	25.28%	10.57%	11.82%	179
5	F	8.15%	16.24%	18.47%	167
6	G	18.54%	8.76%	17.49%	171
7	H	25.56%	5.93%	13.79%	170
8	Grand Total	100.00%	100.00%	100.00%	1150

HEAD

```
In [3]:
```

Out[3]:

	Row Labels	Sum of Jan	Sum of Feb	Sum of Mar	Sum of Total Sales
0	A	5.62%	7.73%	6.16%	75
1	B	4.21%	17.27%	19.21%	160
2	C	9.83%	11.60%	5.17%	101
3	D	2.81%	21.91%	7.88%	127
4	E	25.28%	10.57%	11.82%	179

Data Cleaning and Preprocessing

In [4]:

Out[4]:

	Row Labels	Sum of Jan	Sum of Feb	Sum of Mar	Sum of Total Sales
0	A	5.62%	7.73%	6.16%	75
1	B	4.21%	17.27%	19.21%	160
2	C	9.83%	11.60%	5.17%	101
3	D	2.81%	21.91%	7.88%	127
4	E	25.28%	10.57%	11.82%	179

In [5]:

Out[5]:

	Sum of Total Sales
count	9.000000
mean	255.555556
std	337.332963
min	75.000000
25%	127.000000
50%	167.000000
75%	171.000000
max	1150.000000

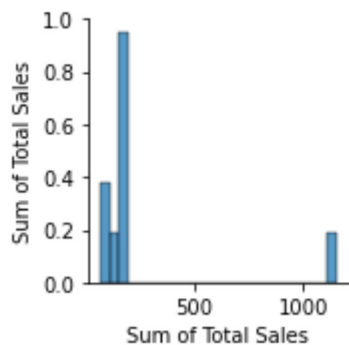
To display heading

In [6]:

```
Out[6]: Index(['Row Labels', 'Sum of Jan', 'Sum of Feb', 'Sum of Mar',  
              'Sum of Total Sales'],  
              dtype='object')
```

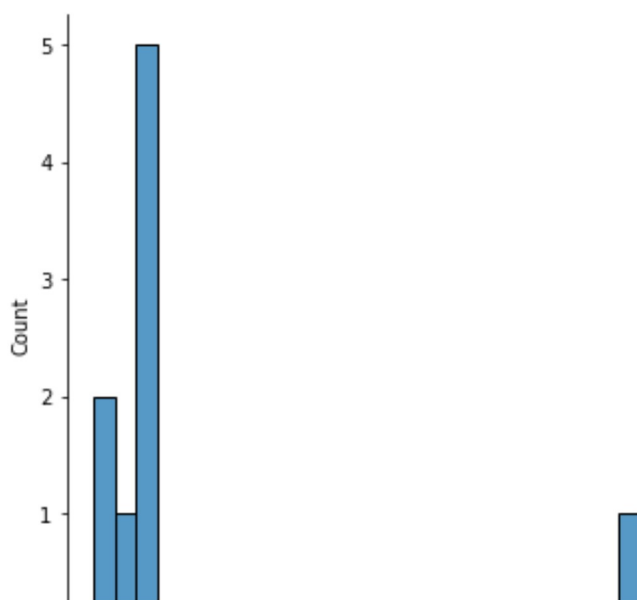
In [7]:

```
Out[7]: <seaborn.axisgrid.PairGrid at 0x24b86d17df0>
```



In [8]:

Out[8]: <seaborn.axisgrid.FacetGrid at 0x24b86d17220>



In [9]:

Out[9]: <AxesSubplot:>



TO TRAIN THE MODEL - MODEL BUILDING

In [10]: `x = a[['Sum of Total Sales']]`In [11]: `# to split my dataset into training and test data
from sklearn.model_selection import train_test_split`

```
In [12]: from sklearn.linear_model import LinearRegression  
lr = LinearRegression()
```

```
Out[12]: LinearRegression()
```

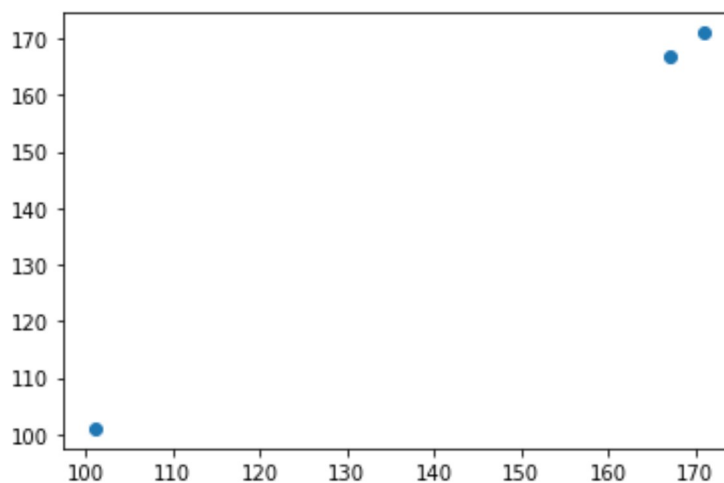
```
In [13]: coeff = pd.DataFrame(lr.coef_,x.columns,columns=['Co-efficient'])
```

```
Out[13]:
```

	Co-efficient
Sum of Total Sales	1.0

```
In [14]: prediction= lr.predict(x_test)
```

```
Out[14]: <matplotlib.collections.PathCollection at 0x24b88ed6310>
```



```
In [15]:
```

```
Out[15]: 1.0
```

RIDGE & LASSO

```
In [16]: from sklearn.linear_model import Ridge,Lasso  
rr=Ridge(alpha=10)
```

```
Out[16]: Ridge(alpha=10)
```

```
In [17]:
```

```
Out[17]: 0.999999996286894
```

```
In [18]: la=Lasso(alpha=10)
```

```
Out[18]: Lasso(alpha=10)
```

In [19]:

Out[19]: 0.9999998663250519