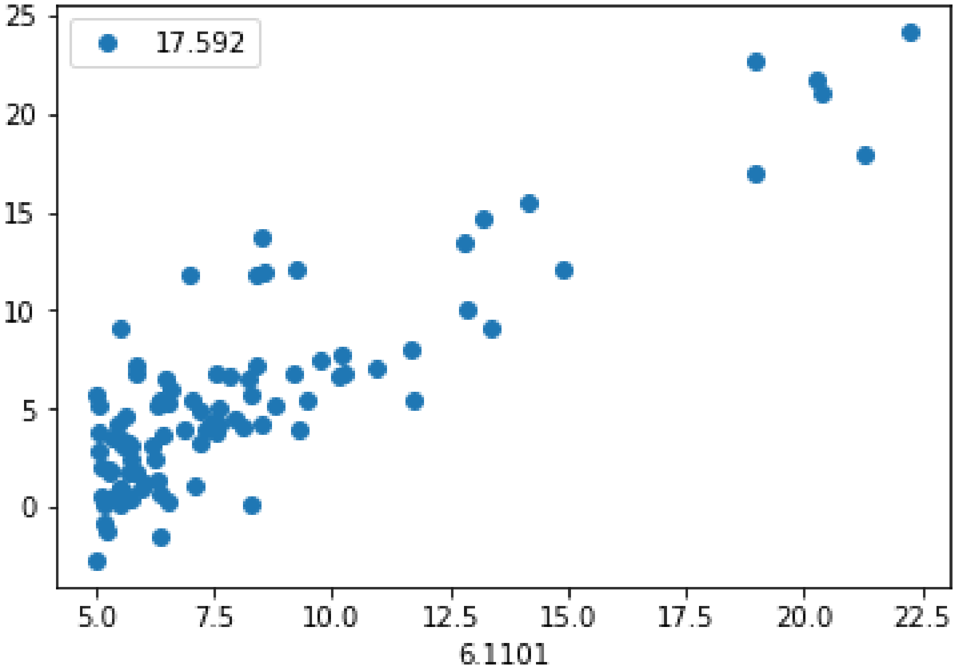
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
df = pd.read_csv("Food-Truck(For Linear Regression Program).csv")
df
```

```
     6.1101    17.592
0    5.5277   9.13020
1    8.5186  13.66200
2    7.0032  11.85400
3    5.8598   6.82330
4    8.3829  11.88600
..      ...       ...
91   5.8707   7.20290
92   5.3054   1.98690
93   8.2934   0.14454
94  13.3940   9.05510
95   5.4369   0.61705

[96 rows x 2 columns]
```

```
df.plot(x="6.1101", y="17.592", style="o")
plt.show()
```



```
x_mean = df["6.1101"].mean()
y_mean = df["17.592"].mean()
print(x_mean, y_mean)
```

```
8.181151041666668 5.716709375000001
```

```
df["x"] = df["6.1101"] - x_mean
df["y"] = df["17.592"] - y_mean
df["x*y"] = df["x"] * df["y"]
df["x^2"] = df["x"]**2
df["y^2"] = df["y"]**2
df
```

```
     6.1101    17.592         x         y        x*y        x^2
y^2
0    5.5277   9.13020 -2.653451  3.413491  -9.057530   7.040802
11.651918
1    8.5186  13.66200  0.337449  7.945291   2.681130   0.113872
63.127643
2    7.0032  11.85400 -1.177951  6.137291  -7.229428   1.387569
37.666336
3    5.8598   6.82330 -2.321351  1.106591  -2.568785   5.388671
1.224543
4    8.3829  11.88600  0.201749  6.169291   1.244648   0.040703
38.060147
..      ...       ...       ...       ...        ...        ...
...
91   5.8707   7.20290 -2.310451  1.486191  -3.433771   5.338184
2.208763
92   5.3054   1.98690 -2.875751 -3.729809  10.726003   8.269944
13.911478
93   8.2934   0.14454  0.112249 -5.572169  -0.625470   0.012600
31.049072
94  13.3940   9.05510  5.212849  3.338391  17.402526  27.173794
11.144852
95   5.4369   0.61705 -2.744251 -5.099659  13.994746   7.530914
26.006526

[96 rows x 7 columns]
```

```
summation_x_y = df["x*y"].sum()
summation_x_squared = df["x^2"].sum()
summation_y_squared = df["y^2"].sum()
print(summation_x_y, summation_x_squared, summation_y_squared)
```

```
1739.5603117330625 1433.4508245398956 2775.2783647179626
```

```
correlation = summation_x_y / (summation_x_squared *
summation_y_squared)**0.5
correlation
```

```
0.8721572919685902
```

```
def getMean(numbers):
    if len(numbers) == 0:
        return None
    else:
        current_sum = 0
        for i in numbers:
            current_sum += i
            current_avg = current_sum/len(numbers)
        return current_avg

def getStandardDeviation(numbers):
    if len(numbers) == 0:
        return 0
    else:
        mean = getMean(numbers)
        std_deviation = 0
        for i in numbers:
            std_deviation += (i - mean)**2
        return (std_deviation/len(numbers))**0.5
```

```
std_deviation_x = getStandardDeviation(df["x"].tolist())
std_deviation_y = getStandardDeviation(df["y"].tolist())
print(std_deviation_x, std_deviation_y)
```

```
3.8641660707441887 5.37672294548257
```

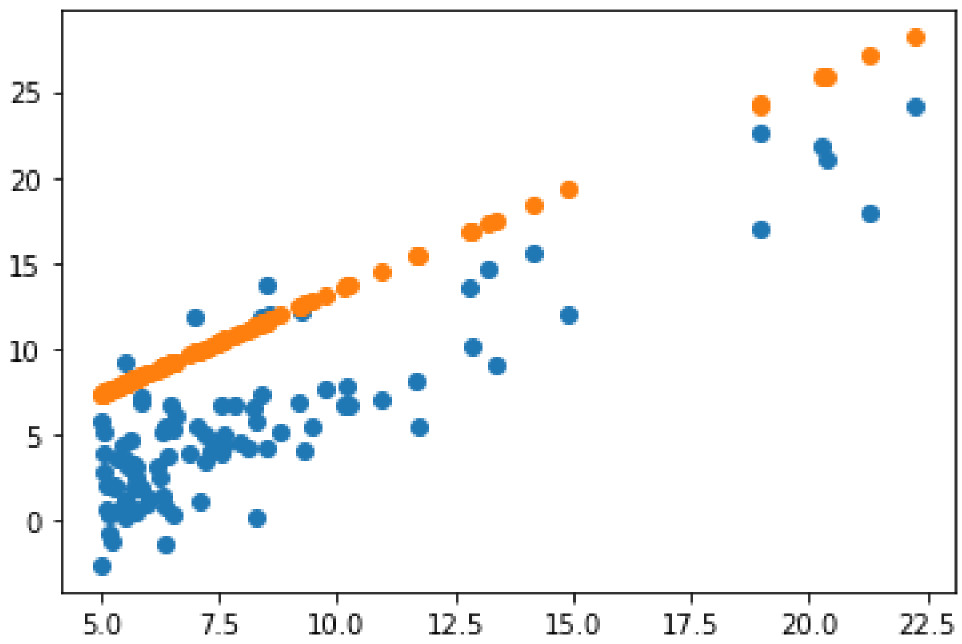
```
m = correlation * (std_deviation_y / std_deviation_x)
m
```

```
c = df["6.1101"].mean() - m * df["17.592"].mean()
c
```

```
1.243654078243253
```

```
df["y_prediction"] = m * df["6.1101"] + c
df
```

```
plot1 = plt.scatter(df["6.1101"], df["17.592"])
plot2 = plt.scatter(df["6.1101"], df["y_prediction"])
plt.show()
```


25
20
15
10
5
0
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5