Linear Regression

Importing libraries

- ☑ pandas
- ☑ numpy
- ☑ mathplotlib.pyplot
- ☑ linear molde from `sklearn`

In [2]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn import linear_model
```

Loading Dataset using pandas

In [3]:

```
df = pd.read_csv('./LR.csv')
df
```

Out[3]:

	Income	Food Expenditure
0	35	9
1	49	15
2	21	7
3	39	11
4	15	5
5	28	8
6	25	9

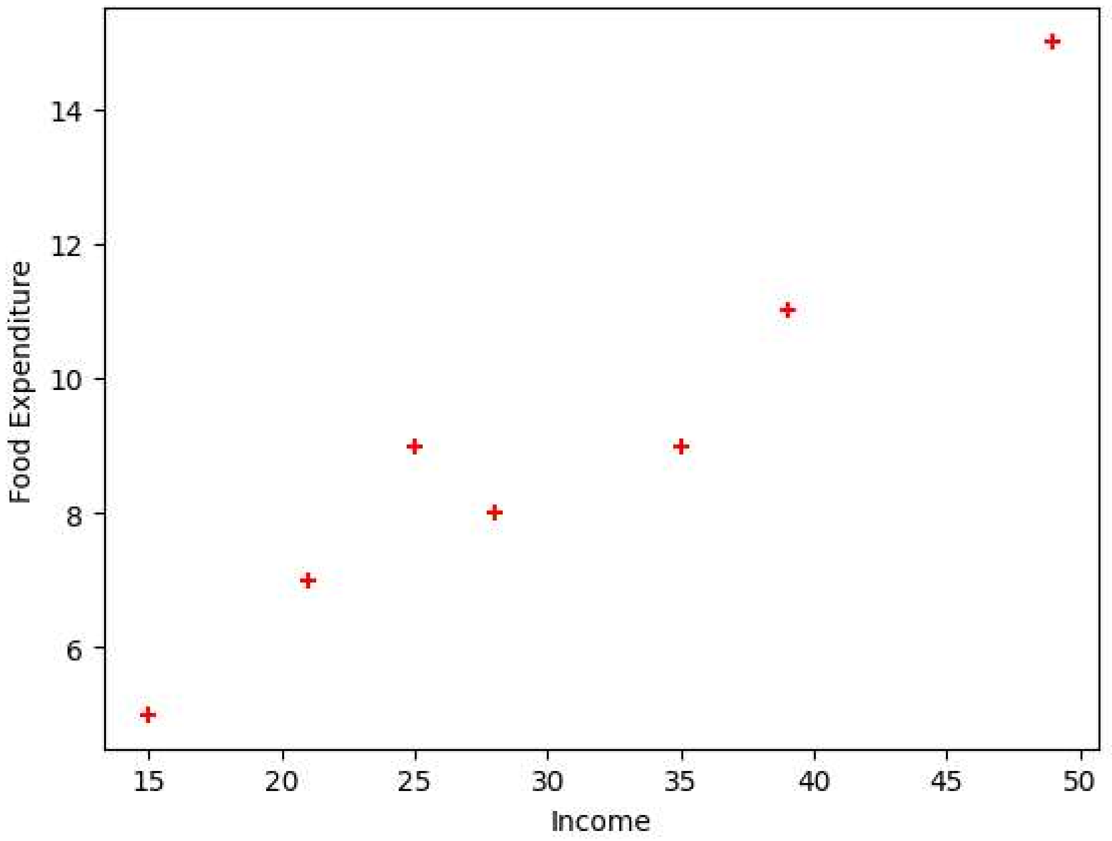
Initial plot of the points

In [5]:

```
%matplotlib inline
plt.xlabel('Income')
plt.ylabel('Food Expenditure')
plt.scatter(df.Income, df["Food Expenditure"], color='red', marker='+')
```

Out[5]:

```
<matplotlib.collections.PathCollection at 0x26b4a0ea790>
```



Linear Regression using sicket learn (linear model)

In [13]:

```
reg = linear_model.LinearRegression()
reg.fit(df[['Income']], df["Food Expenditure"])
```

Out[13]:

```
▾ LinearRegression ℹ ?

LinearRegression()
```

Slope of line (m)

Intercept (c)

In [17]:

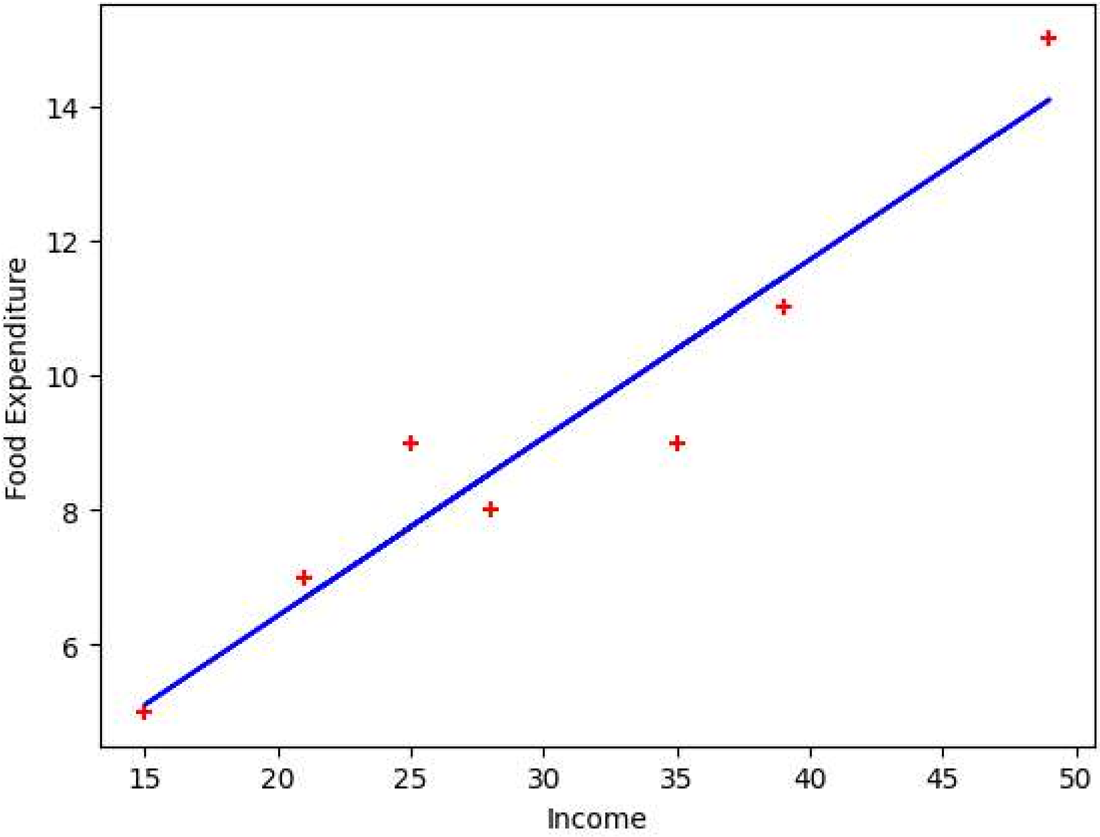
```
m = reg.coef_[0]
c = reg.intercept_
# Print linear equation
print('y = m*x + c')
print('y =', m, '* x +', c)
```

```
y = m*x + c
y = 0.2641711229946525 * x + 1.1422459893048096
```

Plot the points and Linear Regression

```
In [21]: %matplotlib inline
         plt.xlabel('Income')
         plt.ylabel('Food Expenditure')
         plt.scatter(df.Income, df["Food Expenditure"], color='red', marker='+')
         plt.plot(df.Income, reg.predict(df[['Income']]), color='blue', label='Best fitted l
```

```
Out[21]: [<matplotlib.lines.Line2D at 0x26b4c934110>]
```


Food Expenditure
Income