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In [1]:
```
#to import libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [49]:
```
#to import dataset
data=pd.read_csv(r"C:\Users\user\Downloads\4_drug200 - 4_drug200.csv")
data
```

Out[49]:

	Age	Sex	BP	Cholesterol	Na_to_K	Drug
0	23	F	HIGH	HIGH	25.355	drugY
1	47	M	LOW	HIGH	13.093	drugC
2	47	M	LOW	HIGH	10.114	drugC
3	28	F	NORMAL	HIGH	7.798	drugX
4	61	F	LOW	HIGH	18.043	drugY
...	...	...	...	...	...	...
195	56	F	LOW	HIGH	11.567	drugC
196	16	M	LOW	HIGH	12.006	drugC
197	52	M	NORMAL	HIGH	9.894	drugX
198	23	M	NORMAL	NORMAL	14.020	drugX
199	40	F	LOW	NORMAL	11.349	drugX

200 rows × 6 columns

In [50]:
```
#to display top 5 rows
data.head()
```

Out[50]:

	Age	Sex	BP	Cholesterol	Na_to_K	Drug
0	23	F	HIGH	HIGH	25.355	drugY
1	47	M	LOW	HIGH	13.093	drugC
2	47	M	LOW	HIGH	10.114	drugC
3	28	F	NORMAL	HIGH	7.798	drugX
4	61	F	LOW	HIGH	18.043	drugY

DATA CLEANING AND PREPROCESSING

In [51]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 200 entries, 0 to 199
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Age          200 non-null    int64  
 1   Sex          200 non-null    object 
 2   BP           200 non-null    object 
 3   Cholesterol  200 non-null    object 
 4   Na_to_K      200 non-null    float64
 5   Drug         200 non-null    object 
dtypes: float64(1), int64(1), object(4)
memory usage: 9.5+ KB
```

In [52]:
```
#to display summary of statistics
data.describe()
```

Out[52]:

	Age	Na_to_K
count	200.000000	200.000000
mean	44.315000	16.084485
std	16.544315	7.223956
min	15.000000	6.269000
25%	31.000000	10.445500
50%	45.000000	13.936500
75%	58.000000	19.380000
max	74.000000	38.247000

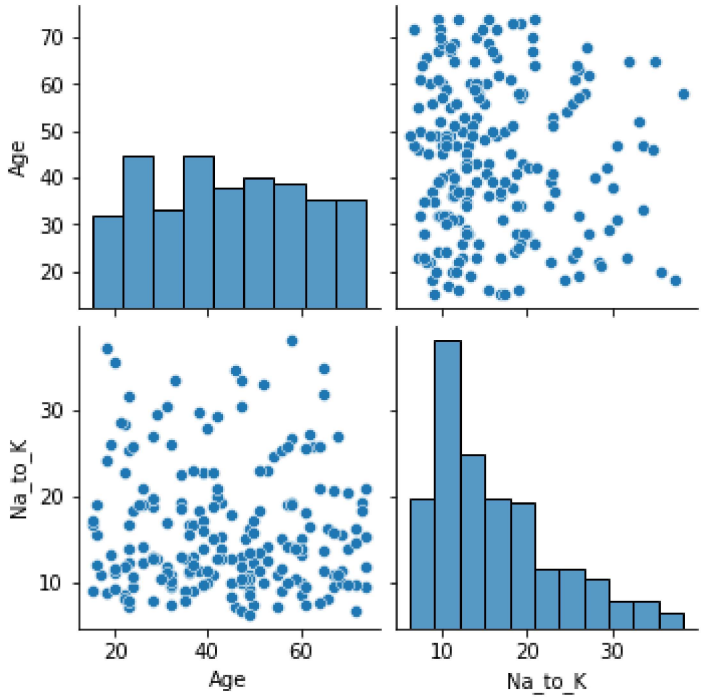
In [53]:
```
#to display the column heading
data.columns
```

Out[53]:
```
Index(['Age', 'Sex', 'BP', 'Cholesterol', 'Na_to_K', 'Drug'], dtype='object')
```

EDA and DATA VISUALIZATION

In [54]:
```
sns.pairplot(data)
```

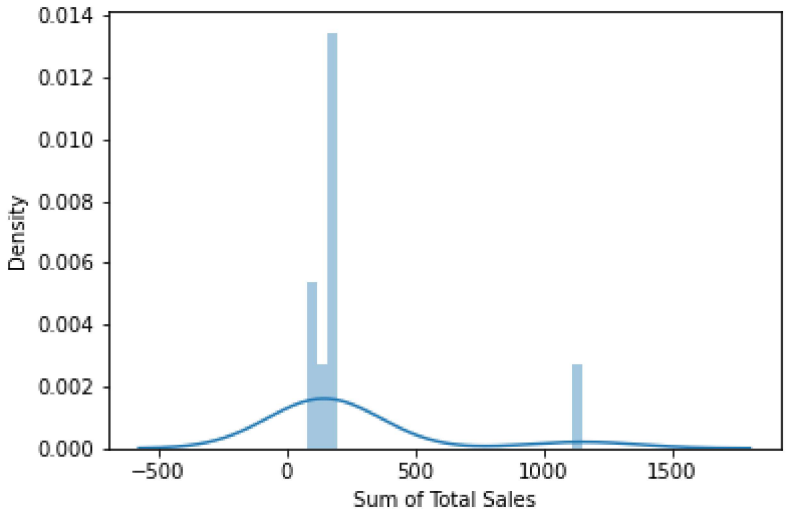
Out[54]:
```
<seaborn.axisgrid.PairGrid at 0x1e5af7fc0a0>
```



In [9]:
```
sns.distplot(data["Sum of Total Sales"])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

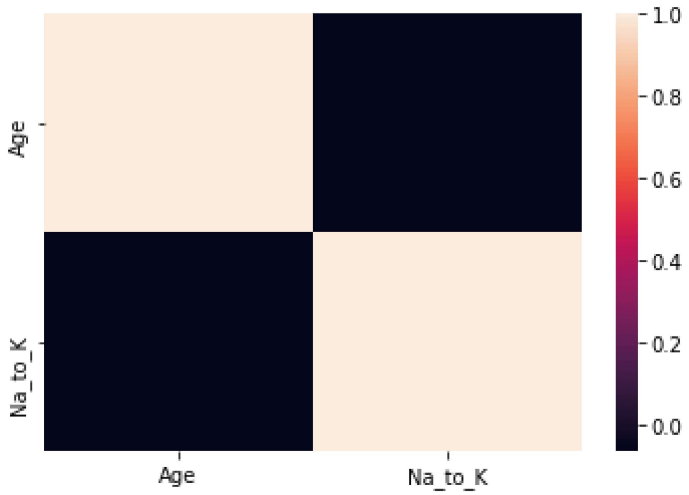
Out[9]: <AxesSubplot:xlabel='Sum of Total Sales', ylabel='Density'>



In [56]:
```
df=data[['Age', 'Sex', 'BP', 'Cholesterol', 'Na_to_K', 'Drug']]
```

In [57]:
```
sns.heatmap(df.corr())
```

Out[57]: <AxesSubplot:>



MODEL TRAINNING

In [74]:
```
x=df[['Age']]
y=df[['Na_to_K']]
```

In [75]:
```
#to split my dataset into trainning and test

from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.3)
```

In [76]:
```
from sklearn.linear_model import LinearRegression

lr=LinearRegression()
lr.fit(x_train,y_train)
```

Out[76]: LinearRegression()

In [77]:
```
#to find intercept
print(lr.intercept_)
```

```
[18.04819595]
```

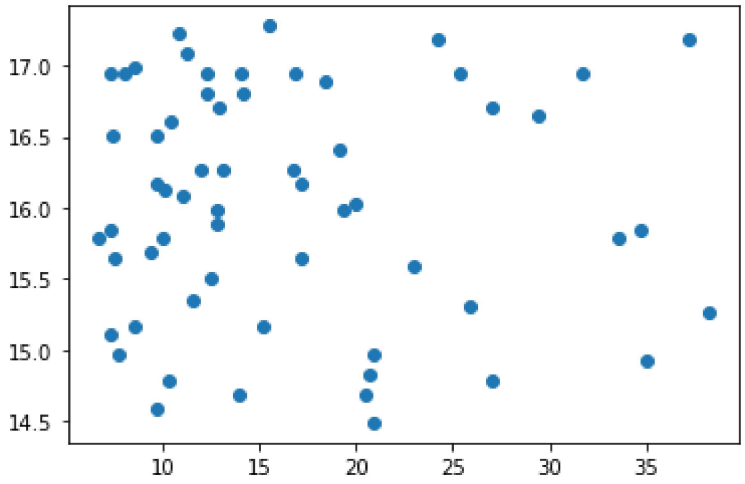
In [78]:
```
coeff = pd.DataFrame(lr.coef_,x.columns,columns=['Co-efficient'])
coeff
```

Out[78]:

	Co-efficient
Age	-0.048056

In [79]:
```
prediction = lr.predict(x_test)
plt.scatter(y_test,prediction)
```

Out[79]: <matplotlib.collections.PathCollection at 0x1e5b2a50910>



In [80]:
```
print(lr.score(x_test,y_test))
```

```
-0.022059454830758662
```