In [1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import statsmodels.api as sm
```

In [2]:
```
var=pd.read_csv('C://Users/Gopi/Desktop/machine learning/csv files/wc.at.csv')
```

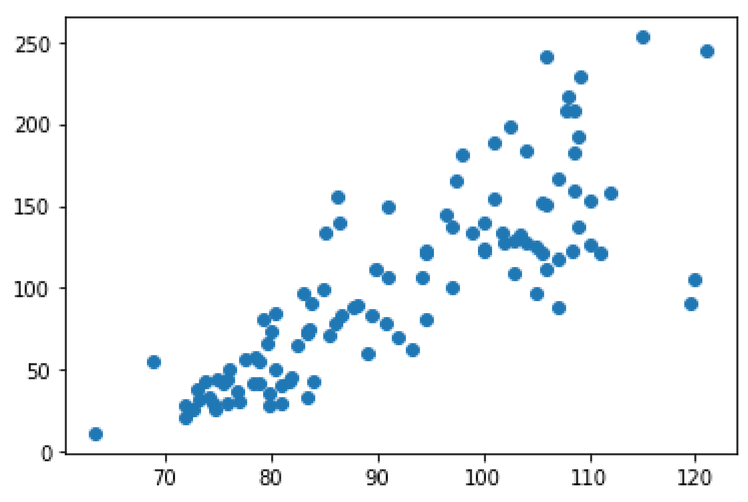
In [3]:
```
len (var)
var.corr()
```

Out[3]:

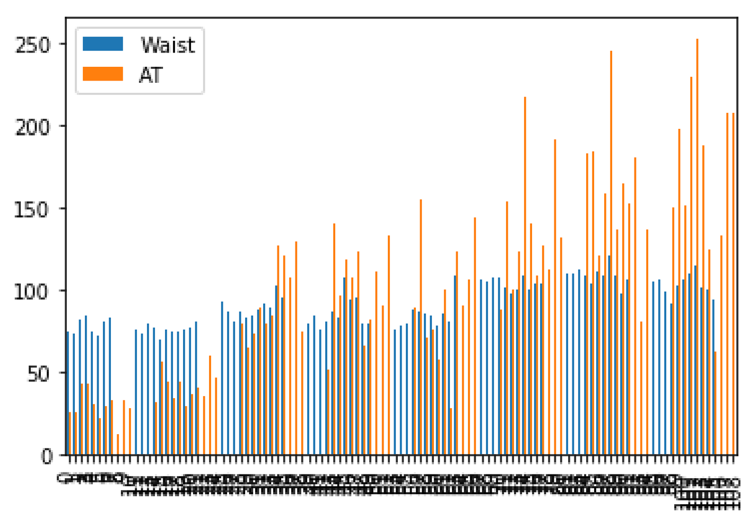
	Waist	AT
Waist	1.000000	0.818558
AT	0.818558	1.000000

In [4]:
```
plt.scatter(x=var['Waist'],y=var['AT'])
```

Out[4]: <matplotlib.collections.PathCollection at 0xb3f8508>

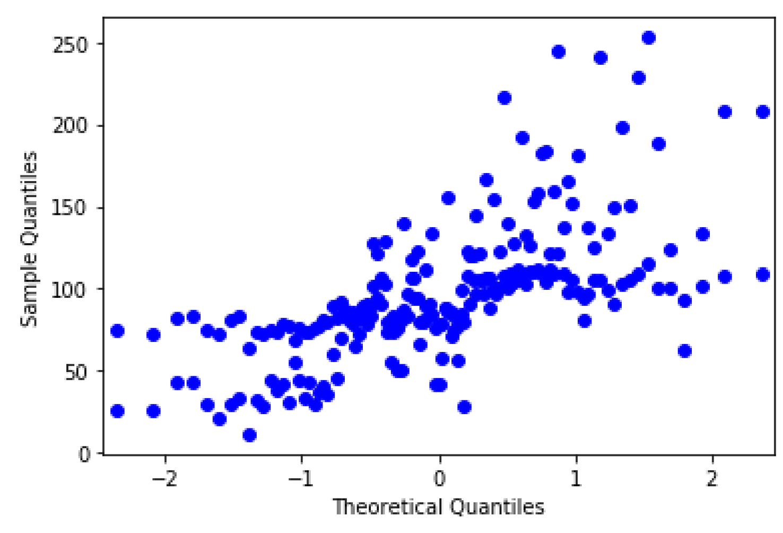


In [5]:
```
plot=var.plot(kind='bar')
```



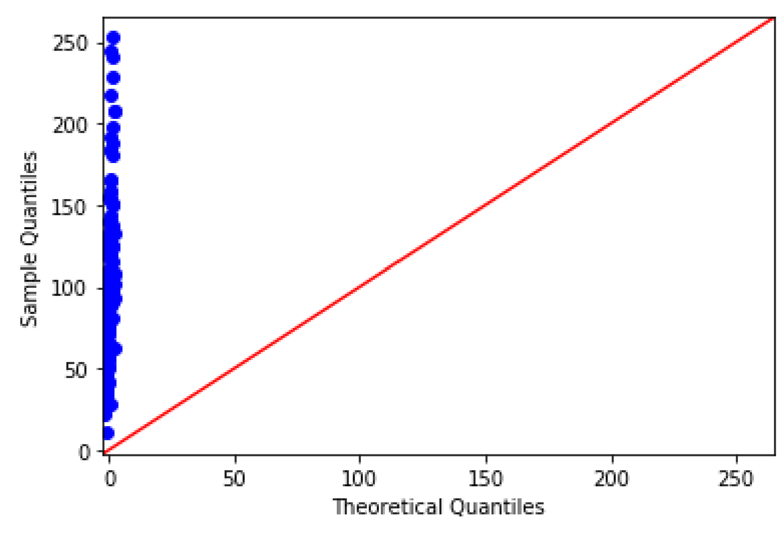
In [5]:
```
sm.qqplot(var)
plt.show
```

Out[5]: <function matplotlib.pyplot.show(*args, **kw)>



In [6]:
```
sm.qqplot(var,line='45')
plt.show
```

Out[6]: <function matplotlib.pyplot.show(*args, **kw)>



In [8]:
```
np.corrcoef(var['Waist'],var['AT'])
```

Out[8]:
```
array([[1.        , 0.81855781],
       [0.81855781, 1.        ]])
```

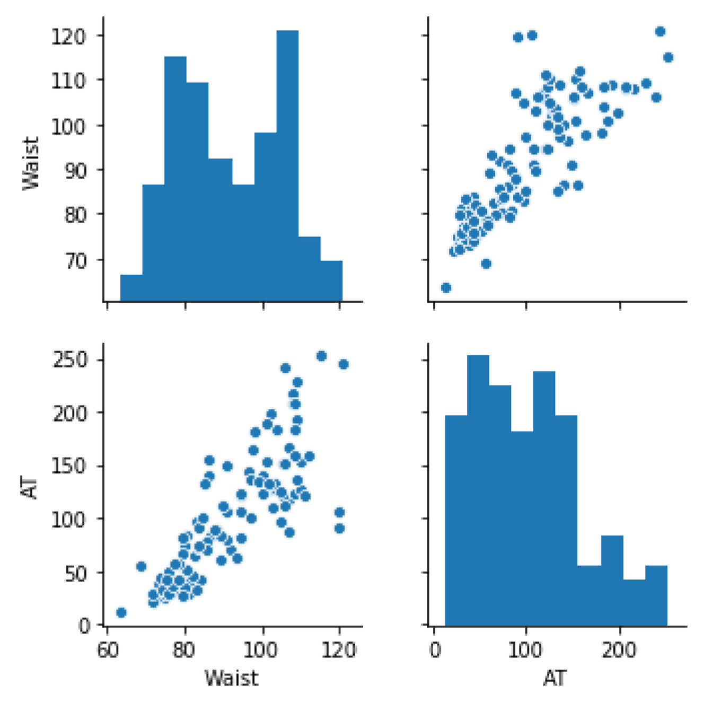
In [9]:
```
var.corr()
```

Out[9]:

	Waist	AT
Waist	1.000000	0.818558
AT	0.818558	1.000000

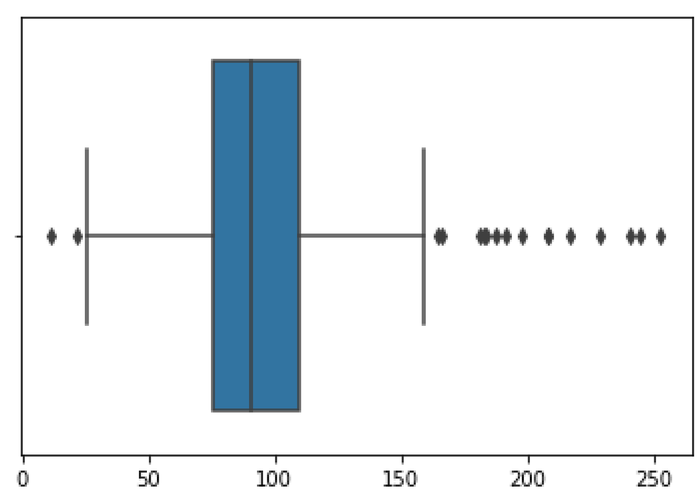
In [10]:
```
sns.pairplot(var)
```

Out[10]: <seaborn.axisgrid.PairGrid at 0xc3063c8>



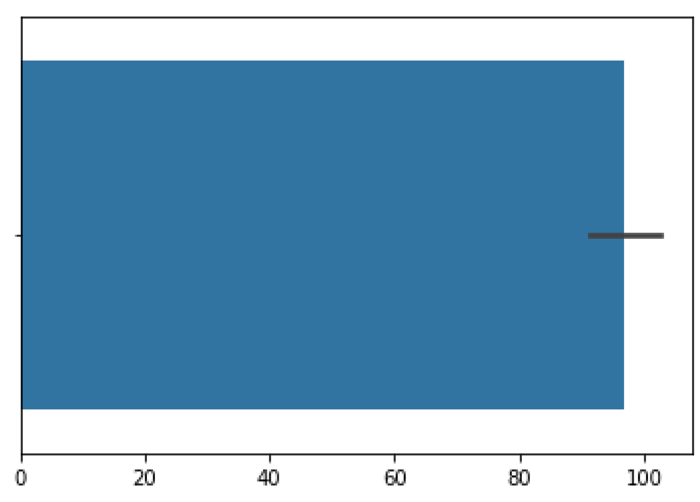
In [11]:
```
sns.boxplot(var)
```

Out[11]: <matplotlib.axes._subplots.AxesSubplot at 0xc563608>



In [12]:
```
sns.barplot(var)
```

Out[12]: <matplotlib.axes._subplots.AxesSubplot at 0xc5bbb88>



In [3]:
```
import statsmodels.formula.api as smf
```

In [4]:
```
model=smf.ols('AT~np.sqrt(Waist)',data=var).fit()
```

In [5]:
```
model.params
```

Out[5]:
```
Intercept        -533.343578
np.sqrt(Waist)     66.443126
dtype: float64
```

In [18]:
```
np.exp(model.params)
```

Out[18]:
```
Intercept         2.354111e-232
np.sqrt(Waist)     7.176009e+28
dtype: float64
```

In [6]:
```
model.summary()
```

Out[6]:

OLS Regression Results

Dep. Variable:	AT	**R-squared:**	0.674
Model:	OLS	**Adj. R-squared:**	0.671
Method:	Least Squares	**F-statistic:**	220.9
Date:	Thu, 19 Dec 2019	**Prob (F-statistic):**	8.91e-28
Time:	19:46:07	**Log-Likelihood:**	-534.38
No. Observations:	109	**AIC:**	1073.
Df Residuals:	107	**BIC:**	1078.
Df Model:	1		
Covariance Type:	nonrobust		

	coef	**std err**	**t**	**P>|t|**	**[0.025**	**0.975]**
Intercept	-533.3436	42.856	-12.445	0.000	-618.301	-448.386
np.sqrt(Waist)	66.4431	4.470	14.863	0.000	57.581	75.305

Omnibus:	3.493	**Durbin-Watson:**	1.581
Prob(Omnibus):	0.174	**Jarque-Bera (JB):**	3.477
Skew:	0.167	**Prob(JB):**	0.176
Kurtosis:	3.809	**Cond. No.**	132.

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

In [7]:
```
print(model.conf_int(0.05))
```

```
                         0           1
Intercept      -618.301455 -448.385701
np.sqrt(Waist)   57.580926   75.305326
```