In [1]:
```
import pandas as pd
data=pd.read_csv("C:\\Users\\DELL\\Downloads\\WC_AT.csv")
data
```

Out[1]:

	Waist	AT
0	74.75	25.72
1	72.60	25.89
2	81.80	42.60
3	83.95	42.80
4	74.65	29.84
...	...	...
104	100.10	124.00
105	93.30	62.20
106	101.80	133.00
107	107.90	208.00
108	108.50	208.00

109 rows × 2 columns

In [2]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 109 entries, 0 to 108
Data columns (total 2 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   Waist   109 non-null    float64
 1   AT      109 non-null    float64
dtypes: float64(2)
memory usage: 1.8 KB
```

In [3]:
```
data.head()
```

Out[3]:

	Waist	AT
0	74.75	25.72
1	72.60	25.89
2	81.80	42.60
3	83.95	42.80
4	74.65	29.84

In [4]:
```
#correlation
data.corr()
```

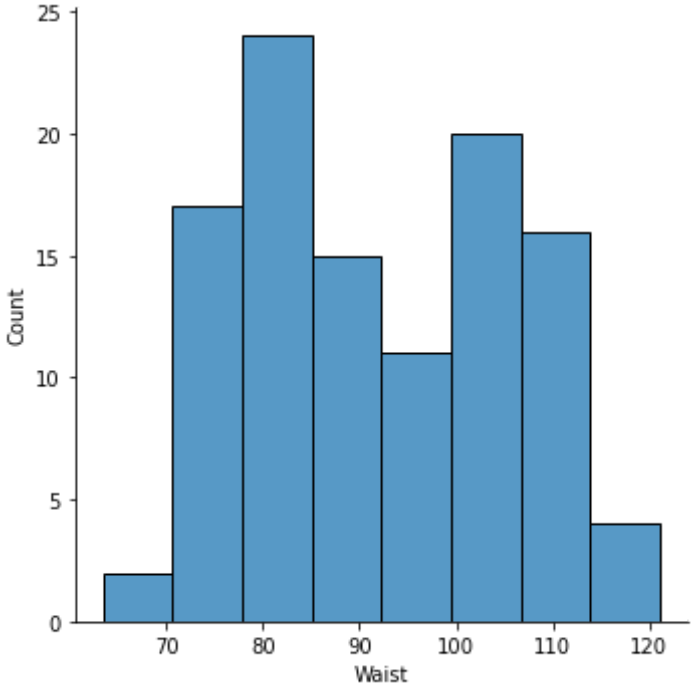
Out[4]:

	Waist	AT
Waist	1.000000	0.818558
AT	0.818558	1.000000

In [5]:
```
import seaborn as sn
```

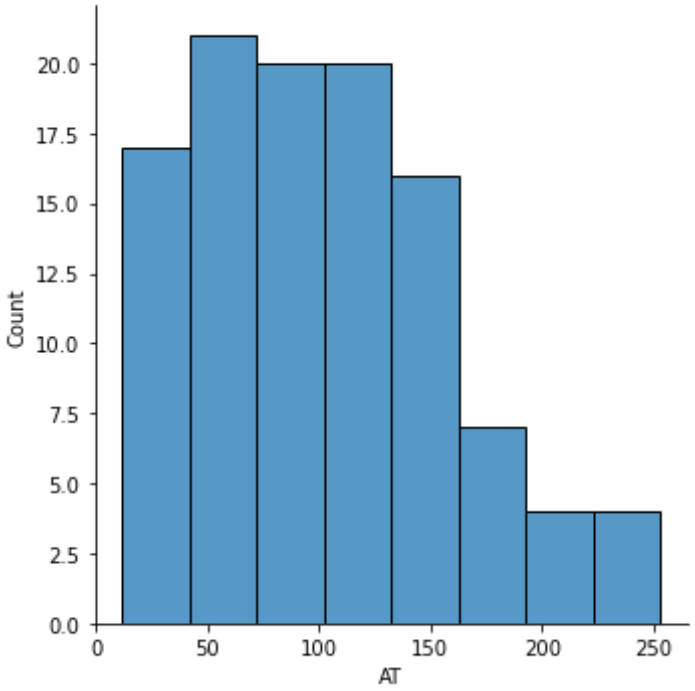
In [6]:
```
sn.displot(data['Waist'])
```

Out[6]:
```
<seaborn.axisgrid.FacetGrid at 0x1fc5f293af0>
```



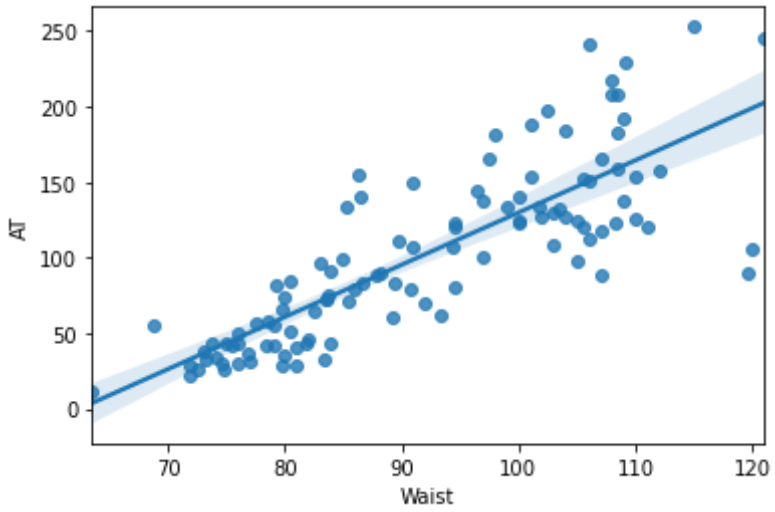
In [7]:
```
sn.displot(data['AT'])
```

Out[7]:
```
<seaborn.axisgrid.FacetGrid at 0x1fc5d1de7f0>
```



In [8]:
```
sn.regplot(x="Waist",y="AT",data=data)
```

Out[8]:
```
<AxesSubplot:xlabel='Waist', ylabel='AT'>
```



In [9]:
```
import statsmodels.formula.api as smf
model=smf.ols("Waist~AT",data=data).fit()
```

In [10]:
```
#coefficients
model.params
```

Out[10]:
```
Intercept    72.163315
AT            0.193716
dtype: float64
```

In [11]:
```
# t and p values
print(model.tvalues,'\n',model.pvalues)
```

```
Intercept    47.025363
AT           14.740376
dtype: float64
 Intercept    2.697170e-73
AT           1.618607e-27
dtype: float64
```

In [12]:
```
# R squared values and R squared adj values
(model.rsquared,model.rsquared_adj)
```

Out[12]:
```
(0.6700368930528429, 0.6669531256981966)
```

In [13]:
```
#prediction for 50 and 100 waist column
newdata=pd.DataFrame([50,100])
```

In [14]:
```
data_pred=pd.DataFrame(newdata,columns=['AT'])
```

In [15]:
```
model.predict(data_pred)
```

Out[15]:
```
0   NaN
1   NaN
dtype: float64
```

In [21]:
```
model.summary()
```

Out[21]:

OLS Regression Results

Dep. Variable:	Waist	**R-squared:**	0.670
Model:	OLS	**Adj. R-squared:**	0.667
Method:	Least Squares	**F-statistic:**	217.3
Date:	Tue, 13 Apr 2021	**Prob (F-statistic):**	1.62e-27
Time:	19:36:05	**Log-Likelihood:**	-377.90
No. Observations:	109	**AIC:**	759.8
Df Residuals:	107	**BIC:**	765.2
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	72.1633	1.535	47.025	0.000	69.121	75.205
AT	0.1937	0.013	14.740	0.000	0.168	0.220

Omnibus:	24.032	**Durbin-Watson:**	1.307
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	37.106
Skew:	1.014	**Prob(JB):**	8.76e-09
Kurtosis:	5.015	**Cond. No.**	239.

Notes:

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

In [ ]: