In [1]:

```
# Importando as bibliotecas
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sbs
%matplotlib inline
from statsmodels.formula.api import ols
```

In [2]:

```
# Carregando os dados
data = pd.read_csv ('pesos2.csv')
```

In [3]:

```
# Verificando as 5 primeiras linhas
data.head ( )
```

Out[3]:

	Sexo	Grupo	Head Size	Brain Weight
0	1	1	4512	1530
1	1	1	3738	1297
2	1	1	4261	1335
3	1	1	3777	1282
4	1	1	4177	1590

In [4]:

```
# Verificando as 15 primeiras linhas
data.head (15)
```

Out[4]:

	Sexo	Grupo	Head Size	Brain Weight
0	1	1	4512	1530
1	1	1	3738	1297
2	1	1	4261	1335
3	1	1	3777	1282
4	1	1	4177	1590
5	1	1	3585	1300
6	1	1	3785	1400
7	1	1	3559	1255
8	1	1	3613	1355
9	1	1	3982	1375
10	1	1	3443	1340
11	1	1	3993	1380
12	1	1	3640	1355
13	1	1	4208	1522
14	1	1	3832	1208

In [5]:

```
# Verificando as 5 últimas linhas
data.tail ( )
```

Out[5]:

	Sexo	Grupo	Head Size	Brain Weight
232	2	2	3214	1110
233	2	2	3394	1215
234	2	2	3233	1104
235	2	2	3352	1170
236	2	2	3391	1120

In [6]:

```
#Verificando o número de linhas e colunas
data.shape
```

Out[6]:

```
(237, 4)
```

In [7]:

```
#Verificar se há valores NAN (Retirar se houver)
data.isnull().sum()
```

Out[7]:

```
Sexo            0
Grupo           0
Head Size       0
Brain Weight    0
dtype: int64
```

In [8]:

```
#Retirando a coluna Grupo
data.drop('Grupo', axis = 1, inplace=True)
```

In [9]:

```
data.shape
```

Out[9]:

```
(237, 3)
```

In [10]:

```
data.head( )
```

Out[10]:

	Sexo	Head Size	Brain Weight
0	1	4512	1530
1	1	3738	1297
2	1	4261	1335
3	1	3777	1282
4	1	4177	1590

In [11]:

```
#Utilizar o método describe para conhecer sua tabela
data.describe( )
```

Out[11]:

	Sexo	Head Size	Brain Weight
count	237.000000	237.000000	237.000000
mean	1.434599	3633.991561	1282.873418
std	0.496753	365.261422	120.340446
min	1.000000	2720.000000	955.000000
25%	1.000000	3389.000000	1207.000000
50%	1.000000	3614.000000	1280.000000
75%	2.000000	3876.000000	1350.000000
max	2.000000	4747.000000	1635.000000

In [12]:

```
data.rename(columns={'Head Size':'cabeca', 'Brain Weight':'peso'}, inplace= True)
```

In [13]:

```
data.corr()
```

Out[13]:

	Sexo	cabeca	peso
Sexo	1.000000	-0.51405	-0.465266
cabeca	-0.514050	1.00000	0.799570
peso	-0.465266	0.79957	1.000000

In [14]:

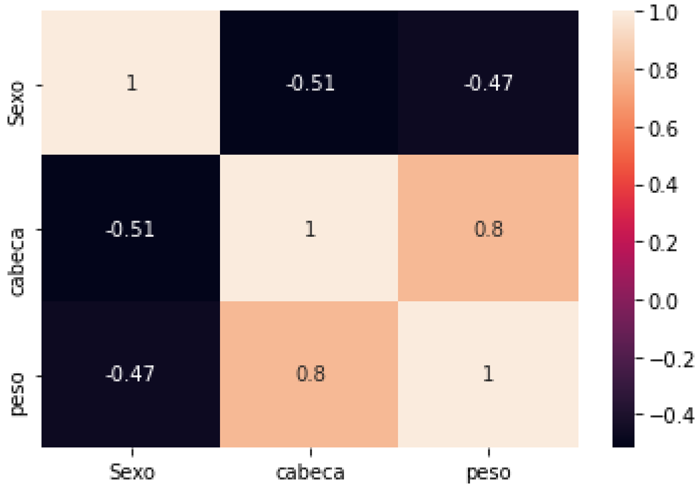
```
corr= data.corr()
```

```
In [15]:
```

```
sbs.heatmap(corr,annot = True)
```

```
Out[15]:
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x59d4130>
```

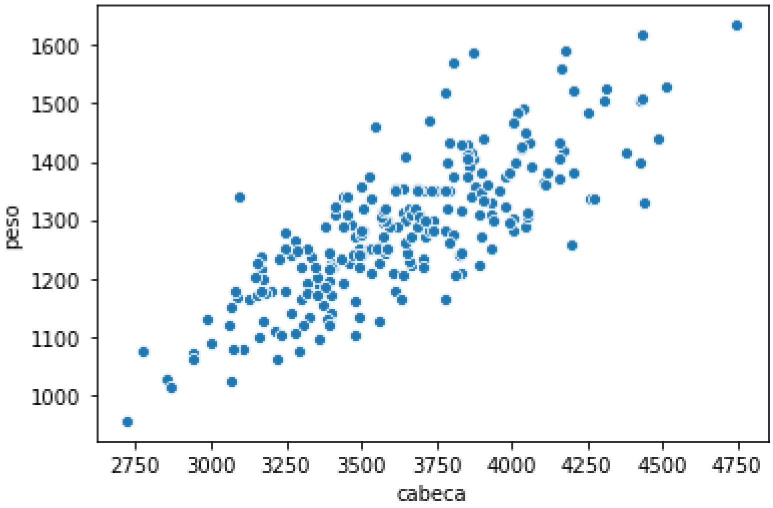


In [16]:

```
sbs.scatterplot(x='cabeca' , y='peso', data=data)
```

Out[16]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x70d6cd0>
```



In [17]:

```
formula = 'cabeca ~ peso'
modelo_v1 = ols (formula, data = data).fit()
modelo_v1.summary()
```

Out[17]:

```
OLS Regression Results

     Dep. Variable:            cabeca          R-squared:     0.639
             Model:               OLS      Adj. R-squared:     0.638
            Method:     Least Squares         F-statistic:     416.5
              Date:  Wed, 18 Nov 2020  Prob (F-statistic):  5.96e-54
              Time:          15:24:15      Log-Likelihood:   -1613.4
  No. Observations:               237                 AIC:     3231.
      Df Residuals:               235                 BIC:     3238.
          Df Model:                 1
   Covariance Type:         nonrobust

                 coef   std err        t   P>|t|    [0.025    0.975]
 Intercept   520.6101   153.215    3.398   0.001   218.759   822.461
      peso     2.4269     0.119   20.409   0.000     2.193     2.661

        Omnibus:  2.687     Durbin-Watson:     1.726
  Prob(Omnibus):  0.261  Jarque-Bera (JB):     2.321
           Skew:  0.207          Prob(JB):     0.313
       Kurtosis:  3.252          Cond. No.  1.38e+04
```

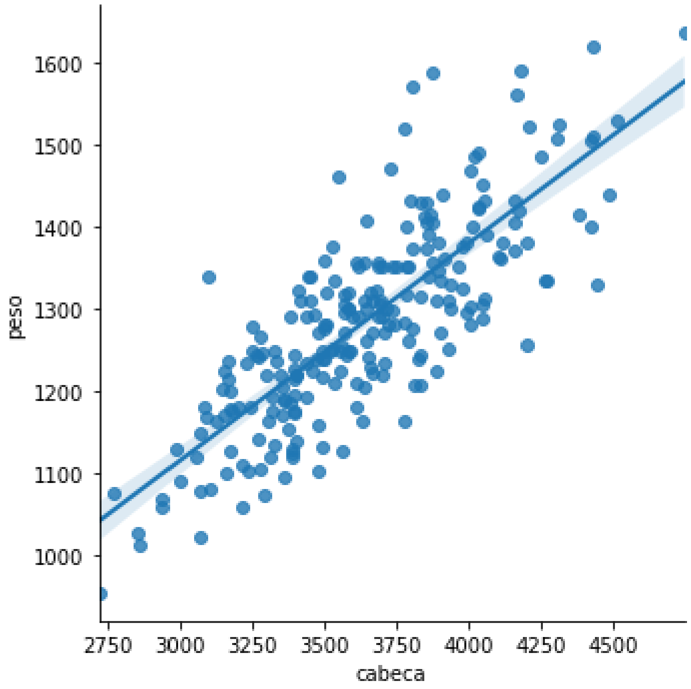
Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The condition number is large, 1.38e+04. This might indicate that there are
strong multicollinearity or other numerical problems.

In [18]:

```
sbs.lmplot(x='cabeca', y='peso', data=data,fit_reg=True)
```

Out[18]:

```
<seaborn.axisgrid.FacetGrid at 0x712cb50>
```



In [ ]:

```
```