```
In [55]:
          import numpy as np
          import pandas as pd
In [56]: x=pd.read_csv(r"C:\Users\user\Downloads\4_drug200 - 4_drug200.csv")
          print(x)
                             BP Cholesterol
               Age Sex
                                              Na_to_K
                                                         Drug
          0
                23
                      F
                                        HIGH
                                                25.355
                                                        drugY
                           HIGH
          1
                47
                      Μ
                            LOW
                                        HIGH
                                                13.093
                                                        drugC
          2
                47
                      Μ
                            LOW
                                        HIGH
                                                10.114
                                                        drugC
          3
                28
                      F
                         NORMAL
                                        HIGH
                                                 7.798
                                                        drugX
                      F
          4
                61
                            LOW
                                        HIGH
                                                18.043
                                                        drugY
                            . . .
                                                   . . .
                . . .
                     . .
                56
                      F
                            LOW
          195
                                        HIGH
                                                11.567
                                                        drugC
          196
                16
                      Μ
                            LOW
                                        HIGH
                                                12.006
                                                        drugC
          197
                52
                      Μ
                         NORMAL
                                        HIGH
                                                 9.894
                                                        drugX
          198
                23
                      Μ
                         NORMAL
                                      NORMAL
                                                14.020
                                                        drugX
                      F
          199
                40
                            LOW
                                      NORMAL
                                                11.349
                                                        drugX
          [200 rows x 6 columns]
In [57]:
         x.mean()
Out[57]: Age
                      44.315000
          Na_to_K
                      16.084485
          dtype: float64
In [58]: | x.median()
Out[58]: Age
                      45.0000
          Na_to_K
                      13.9365
          dtype: float64
In [59]:
          x.mode()
Out[59]:
                  Sex
                         BP
                             Cholesterol Na_to_K
              Age
                                                 Drug
             47.0
                       HIGH
                                  HIGH
                                          12.006
                    M
                                                 drugY
             NaN NaN
                        NaN
                                   NaN
                                          18.295
                                                  NaN
```

In [60]: x.describe()

Out[60]:

	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 [61]: x.sum()

Out[61]: Age

Age 8863

Sex FMMFFFFMMMFFMFFFMMMFMMMFFFMFFMMFMMMFMFFMMFF...

BP HIGHLOWLOWNORMALLOWNORMALLOWNORMALLOWNORMALLOWLOW...

Cholesterol HIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...

Na_to_K 3216.897

Drug drugYdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...

dtype: object

In [62]: x.cumsum()

Out[62]:

	Age	Sex	
0	23	F	_
1	70	FM	
2	117	FMM	
3	145	FMMF	
4	206	FMMFF	
195	8732	${\sf FMMFFFFMMMFMMFFFMFMFMMFMMMFMFFMMFF}$	HIGHLOWLOWNOR
196	8748	${\sf FMMFFFFMMMFMMFFMFMFMMFMMMMFMFFMMFF}$	HIGHLOWLOWNOR
197	8800	${\sf FMMFFFFMMMFMMFFMFMFMMFMMMFMFFMMFF}$	HIGHLOWLOWNOR
198	8823	${\sf FMMFFFFMMMFMMFFMFMFMMFMMMFMFFMMFF}$	HIGHLOWLOWNOF
199	8863	${\sf FMMFFFFMMMFMMFFMFFMFMMFMMMFMFFMMFF}$	HIGHLOWLOWNOR

200 rows × 6 columns

```
In [63]: | x.count()
Out[63]: Age
                         200
                         200
         Sex
         BP
                         200
         Cholesterol
                         200
         Na_to_K
                         200
         Drug
                         200
         dtype: int64
In [64]: | x.min()
Out[64]: Age
                            15
                             F
         Sex
         ΒP
                          HIGH
         Cholesterol
                          HIGH
         Na_to_K
                         6.269
         Drug
                         drugA
         dtype: object
In [65]: x.max()
Out[65]: Age
                             74
         Sex
                              Μ
         BP
                         NORMAL
         Cholesterol
                         NORMAL
                         38.247
         Na_to_K
         Drug
                          drugY
         dtype: object
In [86]: from numpy import cov
         from scipy.stats import pearsonr
         from scipy.stats import spearmanr
In [90]: d1=x["Na_to_K"]
         d2=x["Age"]
         cov(d1,d2)
Out[90]: array([[ 52.18553348, -7.54375153],
                 [ -7.54375153, 273.71434673]])
In [92]:
         print(pearsonr(d1,d2))
         (-0.06311949726772592, 0.3745756399034559)
In [93]: |print(spearmanr(d1,d2))
         SpearmanrResult(correlation=-0.047273882688479915, pvalue=0.5062200581387418)
 In [ ]:
```