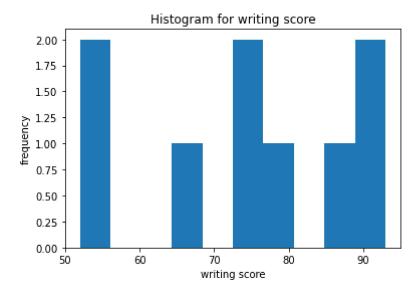
```
In [1]:
          import numpy as np
          import pandas as pd
          import matplotlib.pyplot as plt
          from scipy import stats as st
In [2]:
                pd.read_csv('StudentsPerformanceTest1.csv')
In [3]:
          df
Out[3]:
                                                   writing
                                                                Placement
                                                                                placement offer
                          math
                                     reading
             gender
                                                                                                 Region
                          score
                                        score
                                                     score
                                                                     Score
                                                                                          count
                           72.0
                                         72.0
                                                      74.0
                                                                      78.0
          0
              female
                                                                                              1
                                                                                                   Pune
                                                                                              2
                           69.0
                                         90.0
                                                      88.0
              female
                                                                      NaN
                                                                                                   NaN
                           90.0
          2
              female
                                         95.0
                                                      93.0
                                                                      74.0
                                                                                              2
                                                                                                 Nashik
          3
                           47.0
                                                                      78.0
                male
                                         57.0
                                                      NaN
                                                                                                   NaN
          4
                                                                      81.0
               male
                           NaN
                                         78.0
                                                      75.0
                                                                                              3
                                                                                                   Pune
          5
                                                                      70.0
                                                                                              4
              female
                           71.0
                                         NaN
                                                      78.0
                                                                                                   NaN
          6
                male
                           12.0
                                         44.0
                                                      52.0
                                                                      12.0
                                                                                              2
                                                                                                 Nashik
                                                                                              1
          7
                                         65.0
                                                                       49.0
                male
                           NaN
                                                      67.0
                                                                                                   Pune
          8
                            5.0
                                         77.0
                                                      89.0
                                                                      55.0
                                                                                              0
                male
                                                                                                   NaN
In [4]:
          df2 = df.copy()
In [5]:
          df2
Out[5]:
                          math
                                     reading
                                                   writing
                                                                Placement
                                                                                placement offer
             gender
                                                                                                 Region
                                                                     Score
                          score
                                        score
                                                     score
                                                                                         count
          0
              female
                           72.0
                                         72.0
                                                      74.0
                                                                      78.0
                                                                                              1
                                                                                                   Pune
                                                                                              2
              female
                           69.0
                                         90.0
                                                      88.0
                                                                      NaN
                                                                                                   NaN
          2
                           90.0
                                         95.0
                                                      93.0
                                                                      74.0
                                                                                              2
                                                                                                 Nashik
              female
          3
                male
                           47.0
                                         57.0
                                                      NaN
                                                                      78.0
                                                                                              1
                                                                                                   NaN
          4
                                                                      81.0
               male
                           NaN
                                         78.0
                                                      75.0
                                                                                              3
                                                                                                   Pune
          5
                           71.0
                                                      78.0
                                                                      70.0
                                                                                              4
              female
                                         NaN
                                                                                                   NaN
                                         44.0
                                                                      12.0
                                                                                              2
          6
                male
                           12.0
                                                      52.0
                                                                                                 Nashik
          7
                                         65.0
                                                                       49.0
                                                                                              1
                male
                           NaN
                                                      67.0
                                                                                                   Pune
          8
                                                      89.0
                                                                                              0
                male
                            5.0
                                         77.0
                                                                      55.0
                                                                                                   NaN
In [6]:
          mean = df2['math score'].mean()
In [7]:
          mean
          52.285714285714285
Out[7]:
In [8]:
          median = df2['math score'].median()
```

```
median
 In [9]:
           69.0
Out[9]:
           mode = df2.mode().values[0]
In [10]:
           mode
In [11]:
           array(['male', 5.0, 44.0, 52.0, 78.0, 1.0, 'Pune'], dtype=object)
Out[11]:
In [12]:
           df2.isnull()
                                                                 Placement
Out[12]:
                           math
                                      reading
                                                    writing
                                                                                 placement offer
              gender
                                                                                                  Region
                           score
                                         score
                                                      score
                                                                      Score
                                                                                          count
           0
                 False
                            False
                                         False
                                                      False
                                                                       False
                                                                                           False
                                                                                                    False
           1
                                                                                           False
                                                                                                     True
                 False
                            False
                                         False
                                                      False
                                                                       True
           2
                 False
                            False
                                         False
                                                      False
                                                                       False
                                                                                           False
                                                                                                    False
           3
                                                                                                     True
                 False
                            False
                                         False
                                                       True
                                                                       False
                                                                                           False
           4
                 False
                            True
                                         False
                                                      False
                                                                       False
                                                                                           False
                                                                                                    False
           5
                            False
                                          True
                                                      False
                                                                       False
                                                                                           False
                                                                                                     True
                 False
           6
                            False
                                         False
                                                                       False
                                                                                           False
                                                                                                    False
                 False
                                                      False
           7
                 False
                            True
                                         False
                                                      False
                                                                       False
                                                                                            False
                                                                                                    False
           8
                            False
                                         False
                                                      False
                 False
                                                                       False
                                                                                           False
                                                                                                     True
           num_columns = [col for col in df2.columns if (df2[col].dtype == 'float')]
In [13]:
In [14]:
           num columns
           ['math score', 'reading score', 'writing score', 'Placement Score']
Out[14]:
           for i in num_columns:
In [15]:
                df2[i].fillna(round(mean), inplace=True)
In [16]:
           df2
```

```
Out[16]:
                                       reading
                                                                 Placement
                                                                                 placement offer
                           math
                                                    writing
              gender
                                                                                                  Region
                                                                      Score
                                                                                           count
                           score
                                         score
                                                      score
           0
               female
                            72.0
                                          72.0
                                                       74.0
                                                                        78.0
                                                                                               1
                                                                                                    Pune
                                                                                               2
                             69.0
                                          90.0
                                                       88.0
                                                                        52.0
               female
                                                                                                    NaN
                                          95.0
                                                                        74.0
           2
               female
                             90.0
                                                       93.0
                                                                                               2
                                                                                                   Nashik
           3
                 male
                             47.0
                                          57.0
                                                       52.0
                                                                        78.0
                                                                                               1
                                                                                                    NaN
           4
                             52.0
                                          78.0
                                                       75.0
                                                                        81.0
                                                                                               3
                                                                                                    Pune
                 male
           5
               female
                             71.0
                                          52.0
                                                       78.0
                                                                        70.0
                                                                                               4
                                                                                                    NaN
                                                                        12.0
           6
                             12.0
                                          44.0
                                                       52.0
                                                                                               2
                                                                                                   Nashik
                 male
           7
                                          65.0
                                                                        49.0
                                                                                               1
                 male
                             52.0
                                                       67.0
                                                                                                    Pune
           8
                             5.0
                                          77.0
                                                       89.0
                                                                        55.0
                                                                                               0
                                                                                                    NaN
                 male
           print(df2['Region'].dtype)
In [17]:
           object
           str columns = [col for col in df2.columns if (df2[col].dtype=='object')]
In [18]:
In [19]:
           str_columns
           ['gender', 'Region']
Out[19]:
In [20]:
           for i in str_columns:
                if(i=='gender'):
                     continue
                else:
                     df2[i].fillna(df2[i].mode().values[0], inplace=True)
           df2
In [21]:
                                                                 Placement
Out[21]:
                           math
                                       reading
                                                    writing
                                                                                 placement offer
              gender
                                                                                                  Region
                           score
                                         score
                                                      score
                                                                      Score
                                                                                           count
                            72.0
                                                                                               1
           0
               female
                                          72.0
                                                       74.0
                                                                        78.0
                                                                                                    Pune
                             69.0
                                          90.0
                                                       88.0
                                                                        52.0
                                                                                               2
                                                                                                    Pune
               female
           2
               female
                            90.0
                                          95.0
                                                       93.0
                                                                        74.0
                                                                                               2
                                                                                                   Nashik
           3
                                                       52.0
                                                                        78.0
                                                                                               1
                 male
                             47.0
                                          57.0
                                                                                                    Pune
           4
                             52.0
                                          78.0
                                                       75.0
                                                                        81.0
                                                                                               3
                 male
                                                                                                    Pune
           5
                                                                        70.0
                                                                                               4
               female
                             71.0
                                          52.0
                                                       78.0
                                                                                                    Pune
           6
                                                       52.0
                                                                                               2
                 male
                             12.0
                                          44.0
                                                                        12.0
                                                                                                   Nashik
           7
                 male
                             52.0
                                          65.0
                                                       67.0
                                                                        49.0
                                                                                               1
                                                                                                    Pune
           8
                             5.0
                                          77.0
                                                       89.0
                                                                        55.0
                                                                                               0
                                                                                                    Pune
                 male
           plt.hist(df2['writing score'])
In [22]:
           plt.xlabel('writing score')
           plt.ylabel('frequency')
           plt.title("Histogram for writing score")
```

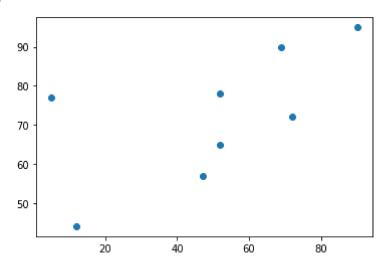
5/27/23, 4:08 PM Data Wrangling 2

Out[22]: Text(0.5, 1.0, 'Histogram for writing score')



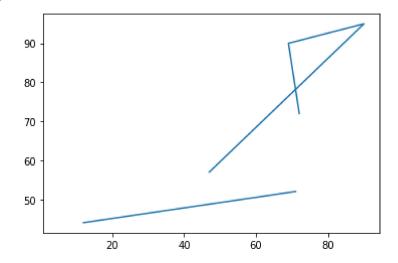
```
In [23]: plt.scatter(df2["math score"], df["reading score"])
```

 ${\tt Out[23]:} \begin{tabular}{ll} \begin{tabu$



In [24]: plt.plot(df["math score"], df2["reading score"])

Out[24]: [<matplotlib.lines.Line2D at 0x2071da45c70>]



```
In [ ]:
```