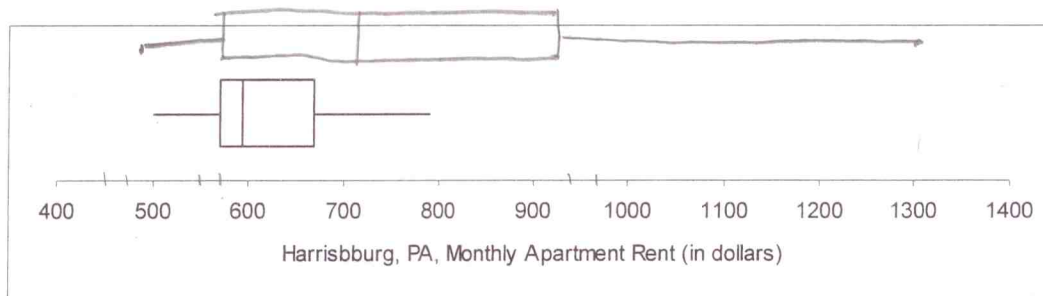


Please show all work on this test. No work shown implies no full credit if (even if the answer is correct!) and no partial credit if the answer is incorrect.

**Problem I.** Below you are given the boxplot for monthly apartment rents (in dollars) in Harrisburg, Pennsylvania and the data for the monthly apartment rents (also in dollars) in Philadelphia, Pennsylvania. Use this information to answer the following questions. (14 points total)



Philadelphia (n=15): 475, 525, 540, 575, 600, 600, 645, 700, 725, 755, 885, 930, 965, 1180, 1300

(a) Find the five-number summary for apartment rents in Philadelphia. Clearly indicate your answers. (5 points)

$\min = 475, Q_1 = 575, \text{med} = 700, Q_3 = 930, \text{max} = 1300$

(b) Draw a boxplot of the distribution of apartment rents in Philadelphia. Draw this boxplot above the boxplot of the Harrisburg apartment rents on the graph given above. (4 points)

*See graph above.*

(c) For the Harrisburg apartment rents distribution we have:

$Q_1 = \$569 \quad \text{median} = \$592.5 \quad Q_3 = \$680$

Use the 1.5 IQR rule to determine which (if any) Philadelphia apartment rents would be considered high outliers for the Harrisburg apartment rent distribution? (5 points)

$IQR = 680 - 569 = 111$   
 $1.5 \times IQR = 166.5$   
 $Q_3 + 1.5IQR = 680 + 166.5 = 846.5$   
Outliers are: \$885, \$930, \$965, \$1180, \$1300.

**Problem II.** Suppose Ben records the noon temperature in New York City on every day in the month of June, and Frank records the noon temperature in New York City on every day in an entire year. Which one (Ben or Frank) would you expect to have the greater standard deviation of temperatures, or would you expect the standard deviations to be very similar? Explain briefly. (4 points)

*Frank would have a greater standard deviation of temperatures than Ben. There is much for variation in temperatures for the entire year than for just the month of June. Thus Frank will have much more data further from his mean temperature than Ben.*

